

All Electron User
programs also work
on the BBC Micro with
OS 1.2 and Basic II

A Database Publication

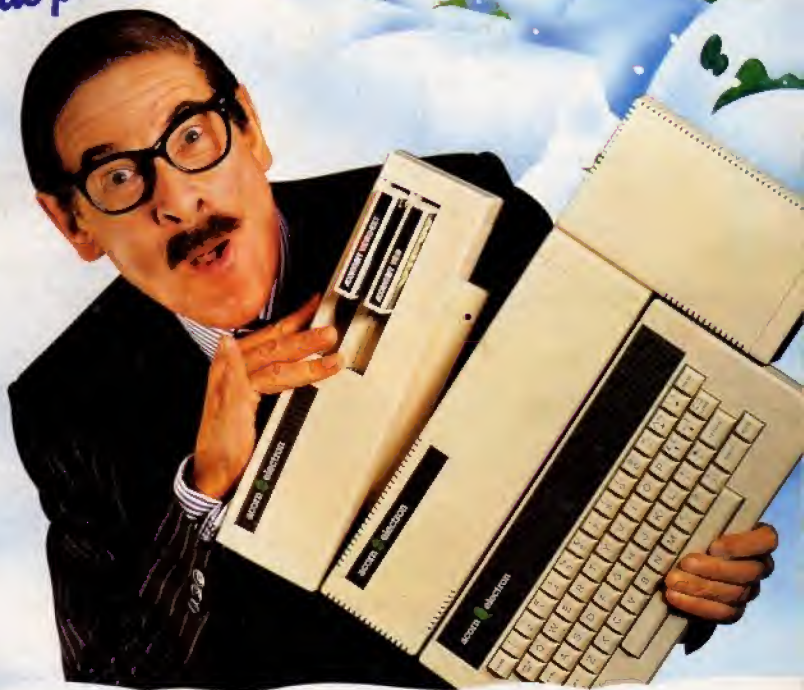
electron user

Vol. 3 No. 3 December 1985 £1

The
ULTIMATE
Christmas present!

Expand your
Electron for
much less
than the
usual price!

EXCLUSIVE
Plus 1 and
Plus 3 offer
— see
centre
pages



**88 helpful
hints for
adventurers**

**First-ever comms
pack for the
Electron**

**Three
great
games!**

BLUE RIBBON

ASTRO PLUMBER



★★NEW★★
RELEASE

DIAMOND MINE II



★★NEW★★
RELEASE

DIAMOND MINE



CASTLE ASSAULT



NIGHTMARE MAZE



HOME COMPUTING
WEEKLY SEPT 85.

£2.50 EACH
or
(MAIL ORDERS ONLY)
ALL 5 FOR £9.95

ALL TITLES AVAILABLE ON THE ELECTRON
NOW FROM ALL GOOD COMPUTER STORES
OR DIRECT FROM BLUE RIBBON SOFTWARE.
TO ORDER DIRECT SEND CHEQUE OR POSTAL ORDER
TO BLUE RIBBON SOFTWARE AND ALLOW 7 DAYS
FOR DELIVERY

BLUE RIBBON SOFTWARE LTD.

SILVER HOUSE, SILVER ST.
DONCASTER TEL. (0302) 21137/8
TELEX: 547676 CHAMCO G FOR CDS.

Showtime

Your invitation to the next Electron & BBC Micro User Show in London. 4

News

All that's new in the rapidly expanding world of the Electron. 7

Software Surgery

Everything you'll want to know about the latest software from our team of frank reviewers. 13

Missile Attack

Your cities are under attack from hostile aliens in this quickfire game. It's up to you to defend them with your laser base. 17

Ready Reference

Comprehensive details of the Electron's graphic modes and colours in an easy to read chart. 21

Get Set Santa

Join in the Christmas fun collecting presents in this seasonal spectacular. 22



Program Probe

Using a Plus 1 with joysticks? We give you the facts you need to know... 25

Beginners

Don't tie yourself in knots. Read on and unravel some of the mysteries of string handling. 28



Space Count

Cedric is back! Young children will love this educational game and improve their counting at the same time. 33



Christmas Card

Send your friends an Electronic Christmas card. Festive tunes accompany this colourful graphic display. 40

Merlin's Cave

More tips and clues for all you intrepid adventurers from our resident wizard. 44

Disc Menu

We continue our disc series with an intelligent menu creator for Plus 3 owners. 46

Link into the world!

At long last you can link your Electron to the outside world. Full details of our exclusive offer. 49



Notest

Confused by all those tadpoles and telegraph wires? Then brush up on your music with this entertaining tutorial. 51

Order Form

You can subscribe, order back issues, software, dust cover or binder... all on one simple form. 61

Notebook

The simplest sorting method, the bubble sort, comes under scrutiny this month. 64

Micro Messages

The pages you write yourself. A selection from our mailbag. 67

Expand your Electron

Don't miss the biggest money-saving offer we've ever made. You'll find full details in the centre pages.

Managing Editor
Derek Meakin
Features Editor
Pete Bibby
Production Editor
Peter Glover
Art Editor
Heather Sheldrick
Advertisement Manager
John Riding
Advertising Sales
John Snowden
Editor in Chief,
Database Publications
Peter Brameld

Published by Database Publications Ltd
Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Telephone: 061-456 8835 (Editorial) 061-456 8383 (Administration) 061-456 8500 (Advertising)
Subscriptions: 061-480 0171, Telecam Gold Mailbox 72 MAG001, Prestel: 614568383,
Telex: 265871 MONREF G, Quoting Ref: 79MAG001.



26.435 January-June 1985


News trade distribution: Europress Sales and Distribution Limited, 11 Brighton Road, Crawley, West Sussex RH10 6AF. Circulation 0293 27059.

Electron User is an independent publication. Acorn Computers Ltd, manufacturers of the Electron, are not responsible for any of the articles in this issue or for any of the opinions expressed.

Electron User welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

Subscription rates for 12 issues, post free:
£12 UK & Eire (Sterling only)
£20 Europe
£35 Overseas

© 1985 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles or listings.



It's on its way... the BIGGEST show of all!

- ★ Your first chance to see the exciting programs and peripherals now being planned for 1986.
- ★ Hundreds of Christmas hardware and software bargains from leading BBC Micro and Electron suppliers.
- ★ Free software – bring your own blank cassette and download programs directly from Micronet.
- ★ Use our satellite link to a giant American database and send messages to micro users in the USA.
- ★ Meet the experts – programmers and writers will be on hand to answer all your queries.



*By handing in this voucher
at the door you save £1 off
the normal admission
price of £3 (adults) and
£2 (children).
(Valid for a maximum of 4 people)*

10am-6pm, Thursday, November 14
10am-6pm, Friday, November 15
10am-6pm, Saturday, November 16
10am-4pm, Sunday, November 17

**New Horticultural Hall
Westminster, London SW1**

Number attending: ☐ 1 ☐ 2 ☐ 3 ☐ 4

EU12

**This voucher is
worth £1 per head!**

*There are also specially reduced prices for school
and college groups. Parties of 10 or more will be
admitted for £1 per head if bookings are made in
advance. Send SAE and cheque (made payable to
Database Publications) to
Electron & BBC Micro User Show,
68 Chester Road, Hazel Grove,
Stockport SK7 5NY.
Tel: 061-480 7863*



***Thursday to Sunday, November 14 to 17
New Horticultural Hall, Westminster, London SW1***

Here's something **SPECIAL** from

BARGAIN OFFER!
FOUR classic games for only £1.50 each

electron
user

We've commissioned four rip-roaring games for the Electron and BBC Micro

Three of this high-powered collection are top-rate machine-code versions of arcade classics and the fourth is a thrilling real-time adventure game. There's hours of enjoyment and something to suit everyone in this unique value for money collection

SNAPMAN – Guide your man through the maze as he munches energy pellets and avoids hostile aliens

ALIEN INTRUDERS – With only your laser for protection you must destroy the waves of aliens who threaten to engulf you

PANZER ATTACK – You are a tank commander engaged in vicious combat against encircling enemy forces

MAYDAY – A futuristic adventure! As captain of an interstellar cruiser you must guide the sole survivor of a stricken space freighter through the wreckage of his craft. If you fail to recover those vital medical supplies a whole planet is doomed!

Please send _____ copy/copies of
Classic Arcade Games.
I enclose a cheque/PO No. _____
for £ _____
made payable to: Database Publications Ltd.

- | |
|--|
| <input type="checkbox"/> Electron tape £5.95 |
| <input type="checkbox"/> BBC Micro tape £5.95 |
| <input type="checkbox"/> BBC Micro disc £7.95 |
| <small>(Please tick! Europe and overseas add £1 p&p)</small> |

Name _____

Address _____

Post code _____ Tel: No. _____

Post to: Classic Arcade Games offer, Electron User, 68 Chester Road, Hazel Grove, Stockport SK7 5NJ

EU12

electron user NEWS

Christmas comes early for Electron owners

CHRISTMAS has arrived early for Electron owners, with the wrappings coming off lots of exciting new hardware and software.

It will all be displayed at the Electron & BBC Micro User Show, New Horticultural Hall, Westminster, from November 14 to 17.

One of the main attractions is bound to be the Tube from Advanced Computer Products – an interface which connects the Electron to the Acorn second processor, giving an extra 64k of memory.

The device plugs into the Plus 1 and "gives a dramatic increase in speed of operation", according to ACP's John Huddleston, who is also hoping to demonstrate, and possibly launch, a 1MHz bus for the Electron at the show.

All Plus 3 owners will want the new tape-to-disc ROM, T2P3, which Slogger is unveiling.

It will enable them to transfer most games from tape on to the Plus 3 disc system, greatly reducing the time taken

to load and run a new game using T2P3 due to the much faster transfer rate.

The memory used by the ADFS does not affect the operation of T2P3 and even very large games may be transferred.

This has been achieved by programming the T2P3 with ADFS operations but using the minimum of Electron memory.

Slogger says a large number of games may be transferred to a single disc, and once there may be loaded and run by selecting the appropriate game from the

menu. Price: £19.95.

From the same company comes Stargraph, a service ROM designed to fit into any ROM expansion socket to provide some useful extensions to the many graphics commands already available on the Electron.

It is compatible with the Plus 1 and Plus 3 interfaces and may be used with either or both. Price: £21.95.

Micro Aid is demonstrating the LTR1, a hard character, letter quality printer imported from Japan and priced at £110, and is launching its Pay Roll software for

the Electron at £29.95.

The show sees an unusual event – the launch of a company, Shards Software, that will be offering adventure game Woodbury End for £9.95 and arcade game Whoopsy for £6.95.

Kansas City Systems is launching two new games at the show. Adventure of Zore, a scrolling adventure costing £8.50, is the last in the trilogy which includes Dracula Island and Ring of Time.

Moon Buggy, from the same firm, is a seven level arcade game at £8.50.

Comms pack is here

THE long-awaited communications package for the Electron has finally arrived.

Developed jointly by Acorn and Pace Micro Technology of Bradford, it will enable Electron users for the first time to reap the benefits of the telecommunications revolution.

The software for the package – known as Tellstar – has been written by Andy Hood, author of the acclaimed Commstar for the BBC Micro.

With its combination of viewdata and ASCII terminal capabilities contained in one eeprom, Tellstar is housed on board an interface card designed to fit into a Plus One.

It is being offered with the bestselling Nightingale modem, also from Pace.

Thriving in Hong Kong

ELECTRON owners living in Hong Kong can now join their own Acorn Computer Users' Society.

The group already has more than 50 members and a monthly journal whose editor, Peter Dolwin, wrote to say that *Electron User's* monthly appearance on newsstands in the

Crown Colony is always an eagerly awaited event.

Members meet every month at the premises of Acorn distributor Brainchild Computers in a building known locally as the Amah's Tooth because of its gold tinted windows.

The range of interests represented include

education, music, business, games and programming.

Guest speakers, including leading figures in the computer industry passing through Hong Kong, are invited to address the monthly meetings.

Recently Roger Broadie, former deputy director of the

Microelectronics Education Project spoke to the group.

The society receives full support from Acorn, and Brainchild, and is able to offer its members a 25 per cent reduction in the cost of equipment necessary for them to connect to Hong Kong Telephone's Micronet service.

Tim programs himself into a job

TIM Davis has made certain he won't be joining the ranks of the unemployed when he leaves school - by winning a job.

Tim, 17, of Formby has to thank his Electron for ensuring that he was successful in the North West competition sponsored by the *Electron User*.

Now he'll be joining Database Software, a division of Database Publications, as a trainee programmer once he has completed his A levels.

The teenager, who already has nine O levels to his name, was one of

350 unemployed youngsters from the North West who entered the contest.

All they had to do was send in any program they had written either for the Electron or the BBC Micro.

Tim's entry was a disassembler in machine code, including Ascii dump, labels and other utilities for the Electron.

This took him into the grand final which was held during the opening day of the Electron & BBC Micro User Show in Manchester.

He negotiated the last hurdle by beating off the competition from



Tim Davis... "It's fantastic"

the two other finalists in a test situation followed by an interview in front of a panel of judges.

"It was all a bit nerve racking", he told *Electron User*, "but it was worth it to win a job."

"What more could any one want, particularly when you live in an unemployment black spot like Merseyside".

After discussions with Database, Tim

decided to return to school to take his A levels before starting work.

"It's fantastic", he said, "they are even going to keep the position open for me while I finish my schooling".

Judges for the final included star North West disc jockey Mike Sweeney of Piccadilly Radio, Richard Hemingway of Radio Manches-

ter, Peter Davidson, head of Database Software, and Derek Meakin, joint managing director of Database Publications.

"The standard of entries for the competition were very high", said Derek Meakin, "but Tim's was nothing less than brilliant."

"He has a great future ahead of him with our company".

Facts on file

SOFTWARE house Kosmos has launched the first nine titles in a new range of leisure and educational programs for the Electron called the Factfile 500 Series.

Twenty programs are being released before Christmas, each containing 500 facts - a total of 10,000 questions, answers, facts and figures compiled by teachers and specialists and presented in multiple choice format.

Factfile 500 packs cost £3.95 each and are intended for use with any of the Kosmos Answer Back Quiz master programs.

Titles so far released are Arithmetic, Spelling, Natural History, General Science, Junior General Knowledge, Senior General Knowledge, Know Scotland, First Aid, and Sport.

The Factfile 500 programs are also available on disc for £5.45 each.

Electron is magic

A TOP UK magician has chosen an unusual co-star to help him cast a spell over audiences across the country - an Electron.

David Hambly, known professionally as "The Micro Wizard", is believed to be the only entertainer in the world to feature a home computer in his act.

With programs written by himself, the magician waves his magic wand to put the Electron through a series of astonishing "tricks".

Such has been his success of late that he has made guest appearances on Pebble Mill at One and Thames Television's Database.

On leaving school, David's first job was as a tea taster. However his real love remained the stage. Working part time as a magician soon took him to Germany, Belgium, Norway, Hol-

land and Denmark.

It was while he was on the staff of a large electronics firm in Ilford that he began to get interested in computers. This in turn led to him introducing them into his act. Since then he's never looked back.

A member of the elite Magic Circle, David Hambly is the author of the world's first book on computer magic.

He is also currently writing a software package to enable Electron users to perform a com-



David Hambly

plete one hour magic show.

"People have always said the Electron is magic", he says. "All I have done is set out to prove it".

Sideways ROM board

LATEST hardware development from Wizard is a sideways ROM expansion board for the Electron. Called the Sidewinder, it has full through bus connection and four sideways ROM sockets which allows peripherals such as the Plus 1 and disc drives to be used together.

Included in the package is a programmable joystick interface with Joy ROM. This is said to have 99 per cent success rate converting keyboard games to joystick. Price £39.95.

LONELY SERENADE IS OVER

A SOFTWARE/audio system for the Electron that takes the loneliness out of practising a musical instrument has been launched by a consortium of professional musicians and software writers called Music Play and Display Operating Systems.

Each twin cassette Micro-Maestro pack is tailored to suit a particular instrument or group of instruments and features contemporary music.

Learning musicians can practise with the program and, having gained confidence and ability, perform with full professional studio accompaniments.

The Initial Micro-Maestro range comprises packages for keyboards, concert-pitch instruments, B-flat instruments and a recorder tutor.

Birthday bargains

A MAJOR exhibitor at all the Electron & BBC Micro User shows, Watford Electronics will be celebrating its 13th birthday during the November event.

The company, which started in a bedroom and grew to be one of the country's leading suppliers in the Acorn market, will mark the occasion with a number of "sensational" bargains.

"No one will have seen anything like it", Watford boss Nazir Jessa told *Electron User*. "It may be our birthday, but it will be our customers who end up with the presents. We intend to make sure of that". Such has been



Nazir Jessa

the success of the company over the years that it recently moved into a purpose-built £700,000 headquarters that reflect its current multi million pound annual turnover.

This now houses Watford's 30 staff and more than 7,000 different components and micro peripherals.

COMPUTER'S PLACE IN THE CHURCH

THE recently-formed Christian Micro Users Association has pledged to support the Electron in its work of linking together computer users of various denominations and promoting the use of micros in church activities.

Association secretary

Philip Clark told *Electron User*: "There is a great need to discover and make contact with the individuals and companies producing Christian software".

"We also need to share the expertise and ideas of the many who have sought to use

micros in their church-related activities".

The aim of CMUA is to concentrate on the popular home computers like the Electron and it has already unearthed a significant number of programs based on Bible studies.

Forum

The association intends to produce a quarterly magazine called *Christian Micro* and, from next January, launch a series of tape magazines for specific micros.

Its other activities will include the formation of local groups, arranging Christian micro exhibitions and conventions throughout the country, acting as a forum for the sharing of information about micros in the church, and promoting the highest quality Christian software.

War games club

SOFTWARE publisher Lathlorien has formed the Warmaster Club, an organisation for war game and adventure game enthusiasts, including Electron users.

There will be no charge for membership, says Lathlorien director Roger Lees. Members will receive regular detailed advance information about new war and adventure releases available through computer dealers.

"The additional benefit of club membership will be to offer a range of club only titles", says Lees, "some of which we hope to publish within the club on behalf of members who are software authors."

"It is hoped that the club will become a vehicle for publishing a range of low volume, special interest software which cannot justify the costs of full commercial publication".

New board gives Electron speed of BBC Micro

A REMARKABLE range of new products designed to enable the Electron to perform as powerfully as the BBC Micro has been announced by Andyk.

The company says its £29.99 Fast Electron Board makes the speed of the machine in all modes comparable to that of the BBC Micro.

The increase in speed will allow BBC Micro software - where speed

is the limiting factor - to run successfully on the Electron, says Andyk director George Rawlins.

"All Electrons can be modified easily and the changeover from fast to slow or vice versa can be switched. The increased speed and overall low power consumption is ideal for control applications", he added.

Capability

Also released by Andyk are a £34.99 RS 423 serial port which has drive capability and software interface similar to that of the BBC Micro and plugs into the Plus 1 cartridge slot.

Then there's a £9.99 eprom card which can take applications software and will also allow utility ROMs to be used.

Finally a £24.99 battery-backed sideways

RAM will allow ROM software to be developed and downloaded via disc or tape.

Rawlins told *Electron User*: "My efforts have concentrated on bringing the Electron into the low cost control environment because the machine is more reliable than other micros in its range."

"This is due to the very large scale integration technology used within it, giving the added bonus of low power consumption."

"My company also intends to launch three other products in January to give the Electron more versatility in the control environment."

"These are a real-time clock, an extended I/O capability giving the Electron a user port, and a low-cost LCD display which will make the machine more portable".

Revision's easier on your micro

LEADING publishers of printed revision aids for secondary school students Charles Letts has launched Keyfacts Revision software for the Electron.

The eight programs are designed for use throughout the O-Level, GCE, CSE and GCSE courses.

Letts says the programs act as a supplement and enhancement to book based learning rather than simply duplicating it.

Subjects covered are biology, chemistry, computer studies, English literature, geography, mathematics and physics.

The programs employ a variety of approaches to maximise the student's interest, the aim being to encourage active participation by the student in home studies, and they feature extensive use of graphics.

Price of each package is £11.50.

SOLIDISK EFS COMBINES DISC AND A SOCKET FOR THE WIN

Solidisk Double Density DFS is now the ultimate in reliability and supported by the largest amount of software available for the Electron.

Solidisk relies on a good product and a large support network to win the heart of the user.

With over 75 Local Experts, covering England, Scotland and Wales, Solidisk can offer many users regional free fitting and advice.

With an ever increasing catalogue of free software, even users who are new to the Disc system can expect to build up a large library in a fairly short time.

Solidisk Software Support Service already has responsibility for over 50,000 BBC computer users and the ability to give you the best service matched only by the largest companies.

Solidisk Double Density DFS handles both BBC Discs and Electron Discs, in single and double density whereas the Acorn's PLUS 3 can only handle ADFS discs.

Solidisk ADFS has nice features such as automatic disc format sensing, built-in disc formatter and verifier and programmable disc speed.

It also has more than 20 disc utilities built into the ROM.

Standard features for both BBC DFS and ELECTRON ADFS implementations include:

1) Automatic Write Error Correction.

2) Automatic 40/80 track stepping, the ADFS 2.1 will let you read and write 40 track discs if you have an 80 track drive.

3) Disc repair facilities.

Disc sector editor (*DZAP), memory editor (*MZAP), recover good sectors (*RECOVER) rewrite multiple sectors (*RESTORE), read bad sectors and bad track (*RTRACK), repair and restore bad sectors and track (*WTRACK) and the powerful disc copy (*DCOPY) which is capable of duplicating even some non BBC discs.

4) Tape to disc facilities.

Direct transfer from tapes to disc (*TAPEDISC) will work with all unprotected programs. *TAPELOAD and *TAPESAVE will cope with more difficult ones. Only in some cases (multipart games cassettes) will you need Solidisk tape copier.

5) Wordprocessing facilities.

This facility allows *BOOT and other text files to be edited, saved and printed in any screen mode.

6) Automatic disc format sensing.

On Shift-Break, the STL ADFS 2.1 will detect the disc format and use the right BBC DFS or Electron ADFS to run.

On the Electron ADFS side, the 2.1 ROM also has some very nice features:

1) Extensive Disc formatting facilities.

*FORM40, *FORM80, *FORM160 and *WFORM (for the Winchester) are available to handle any disc drive.

2) Disc verifying facilities.

*VERIFY will check all disc sizes including Winchester for media defects.

3) Number of opened channels.

This is the star feature of Solidisk ADFS.

This facility (*OPEN) allows you to specify how many files will be opened in a program, thus maximising the available RAM while avoiding buffer page swapping as on the Acorn ADFS.

It leaves PAGE at &1900 for most programs, gives more room to View and Viewsheets and avoids unnecessary conversion work for many programs originated for the BBC DFS to be run on your Electron.

On the BBC DFS side, the STL ADFS 2.1 handles both single and double density and in addition, it supports:

1) Unlimited catalogue entries.

2) Unlimited filesize.

THE SOLIDISK 16k SIDEWAYS RAM:

Solidisk Sideways RAM is an almost indispensable add-on for the Electron with disc drives.

The Sideways RAM occupies the same memory area as the BASIC or ADFS ROM in the micro's memory map. This means that Sideways RAM can run almost any ROM type software,

including languages, utilities and games.

Sideways RAM is notably invaluable to run games and specially "MEGAGAMES".

Games and programs run at 2MHz clock speed in Sideways RAM, if loaded into the Electron RAM, they can only run at 1MHz clock speed, ie half the speed of Sideways based games.

Megagames are too large to be run on the unexpanded Electron.

They use extensively 8 colour high resolution screen (mode 2), background music, sound and



high speed sprites.

Solidisk supply free software to maximise the use of Sideways RAM on the Electron. These include Wordprocessor, Spreadsheet, Database, Toolkit, Machine Code Monitor, Printer Buffer, Sprites, Playtunes, Virtual Memory Processor, VDU Replay, Screen Effects, digitised pictures etc ...

THE WINCHESTER SOCKET:

Solidisk has the most powerful Winchester system for the BBC computers and the Electron. The Winchester system can provide from 20 Megabytes to a theoretically possible 1300 Gigabytes of storage, directly on line with the Electron.

The same Winchester unit can be used on the BBC B, the BBC PLUS and the Electron without any change.

You can read more about it in BBC Micro User or in Acorn User Magazines. Price of a 20 Megabytes system is only £700.00 + VAT (£805.00).

UPGRADE, 16K SIDEWAYS RAM WINCHESTER FOR ONLY £59.00

SOLIDISK SPECIAL MITSUBISHI DISC OFFER:

This offer comprises:

- One 80 track Double Sided (640 kbytes) 3.5" Mitsubishi disc drive with its own PSU. Cased in beige.
- Solidisk EFS Disc Upgrade, 16K Sideways RAM and Winchester socket.
- One software package containing four 3.5" discs, detailed below.
- Full one year guarantee and 2 manuals.

PRICE: £200.00

You can also order as many Megagame Packs at the same time as you like. Each Megagame Pack consists of three 3.5" discs and contains on average 20 games.

THE SOFTWARE:

The software contains everything to start a library: the big four (Database, Wordprocessor, Spreadsheet and Graphic), Utilities and Games.

Database:

Solidisk Database is very easy to understand and use. You are presented with a 15 option Menu. Each option will lead to a new Menu and so on. Mode 3, 80 column screen is used throughout so that what you see is what will be printed on paper. With Solidisk Database, you can create as many records as you like, each record can be up to 15 fields of up to 60 characters. You can sort, search, index, mailmerge, append, create subset, calculate etc. Solidisk use the same Database to process all your orders.

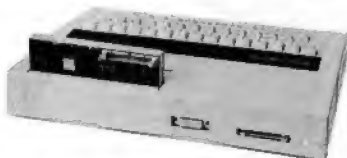
Wordprocessor:

Solidisk Wordprocessor is WYSIWYG type (What You See Is What You Get) and has all the commands of a professional tool. It features 80 column screen, on screen justification, page numbering, search and replace, word count, free space, Wordstar like editing commands: insert and overwrite, block mark, move, copy, delete, save, load to cursor, * commands etc..

Spreadsheet:

Solidisk Spreadsheet is also Menu driven and has the same file

structure as Solidisk Database. You can have as many rows and columns as you like, each column can be as small as two characters wide or as big as 70 characters. All maths functions are



supported. Recalculate, Replicate, Print, Print If, Sort, Search, Define Zone, Mailmerge, Text Input/Output etc... are included.

Toolkit:

Solidisk Toolkit is almost indispensable for Electron programmers, it has 24 star commands (Status, Wipe, LVAR, Move, Search and Replace, Expand, Salvage, Keyload etc...).

ORDER FORM

PRICE LIST and ORDER FORM.

	Price	P&P
Diskettes		
Verbatim 3.5" box of 10	£40.00	£1.00
Software Pack	£10.00	£1.00
Solidisk EFS	£59.00	£1.00
Disc Offers:		
640k Mitsubishi MF453 Disc Outfit	£200.00	£3.00
1.3 MB Fantastic Offer	£310.00	£3.00
20 MB Winchester system	£805.00	£10.00

Total =

Name: _____

Address: _____

Payment ☐ Cheque ☐ Cash or Postal Orders
☐ Bank transfer ☐ Other means

Access or Barclay Credit Card Account:

You can also order by phone 0702 354 674
9AM-5.30PM

SEND TO:
SOLIDISK TECHNOLOGY LIMITED,
17 SWEYNE AVE,
SOUTHEND ON SEA,
ESSEX SS2 6JQ.

We reserve the right to change specifications and prices for improvements.

MIRRORSOFT

HARRIER STRIKE FORCE



Designed in co-operation with British Aerospace, Strike Force Harrier is a full colour flight and battle simulation complete with manual, flight pattern diagrams, and free poster.

Features:

- | | |
|-------------------------|------------------------|
| Multiple ground targets | • Multiple air targets |
| Ground detail | • 3-D mountains |
| Sky detail | • Moving horizon |
| Weapon choice | • V/STOL |
| Multiple missions | • Strategic planning |
| Practice mode | • Realistic air combat |
| Full aerobatics | • HUD |

Can you meet the ultimate challenge?

Publication October 15th

On cassette for BBC B and Electron £9.95

On disk for BBC B £12.95

MIRRORSOFT

Maxwell House, 74 Worship Street, London EC2A 2EN. Tel: 01-377 4644 (24 hours)
Trade orders: Mirrorsoft Ltd, Purnell Book Centre, Paulston, Bristol BS18 5LQ.

Software Surgery

THE COLUMN THAT TAKES A LOOK INSIDE THE LATEST RELEASES

Paintbox is a big draw

Paintbox II
Beebugsoft

BEEBUGSOFT have steadily gained a good reputation among owners of the BBC and Electron micros, and so I was pleased to receive this cassette for review.

There have been other drawing packages for the Electron, and it is perhaps important to look for enhancements and original features.

One telling point for this program is that there are too many options to fit into the main menu, and so there are some placed onto a secondary menu which has to be accessed from the first.

The options are "acquired" in a rather ikon-like style, with the cursor being moved by the

keyboard or joystick to the symbol.

Certain "dangerous" options have to be acquired twice by the Space bar, thus providing a safety net for unwary users.

Working in Mode 0, 1 or 2, there is a wide range of colours available, with the most colourful screens, of course, in Mode 2.

Shapes can be drawn using a continuous row of dots, using any colour, with colour changes being easily made at any point.

The dot can be replaced by a brush of variable width, and also variable shape, including a very powerful option to define your own shape of brush.

Just these few options kept

me occupied for quite a while as I explored their potential by drawing variations of triangles, rectangles, circles and more complex shapes.

As is almost standard now, there's a rubber band facility. This allows for accurate placement of shapes by showing what is about to appear on-screen just before the final selection is made.

Indeed, another colour may still be chosen while in this mode, thus increasing the possibilities.

Shapes can be infilled, although complex shapes tend to need several attempts.

Text can easily be interspersed with the graphics, and this is just one of the range of features whose use is clearly displayed in the accompany-



ing 48-page booklet.

This is essential reading if the true potential of this system is to be fully explored and exploited.

With GCOL options available, and the colour palette changeable, there is enough to bewilder or excite any user.

I have used other drawing packages on the Electron, but I haven't found a better one yet.

Phil Taylor

Rousting robots aids your maths

Quick Thinking Plus
Mirrorsoft

THIS package by Mirrorsoft contains two games for youngsters, Sum Vaders and Robot Tables. Both programs are designed to give practice in number skills.

Sum Vaders requires you to

use some quick thinking to stop the invasion of robots.

Addition, subtraction, multiplication and division problems are presented and you have to get the answer right first time.

An alien spacecraft bearing a number moves across the screen. It releases a robot

invader which also has a number.

The object of the game is to destroy the robot before it reaches the ground. To do that you have to type the correct response to the sum.

In the addition option, you have to add the two numbers, while the subtraction option

has you taking the smaller number from the larger.

The product is entered in the multiplication option and the smaller number is shared into the larger in the division option.

As your skills increase, so

**Sports
quiz
scores
good
points**

Answer Back Sports Quiz
Kosmos

KOSMOS has developed quite a reputation for its Answer Back programs, and the latest addition to the collection, the sports quiz, keeps up the good work.

What you get for your money is more than 750 questions divided into 26 categories.

These must cover just about every area of sport.

The questions can be mul-

tiplied choice, or yes/no answers. The whole program is regarded as a sporting contest - you against Kosmos.

Every time you get a question wrong, it's a point for Kosmos. But if you get one enjoyable to play.

For each correct answer you also get three credits, and these credits can be cashed in for a choice of two games - football or tennis.

In football, you keep goal against a very competent Kosmos forward line, while in tennis you score points each

time you hit the ball.

Apart from the set questions, the program gives you the ability to create your own quiz.

This doesn't need to have a sporting theme - I've used it to create questions on science topics.

This program is well-written and bug-free. The games, while not arcade standard, demand some skill and are enjoyable to play.

The main menu is clear and easy to use.

Rog Frost

From Page 13

does the difficulty, the attackers coming in lower and faster. Your turn ends when five aliens get past and land on Earth.

There are five levels of difficulty for the adding and subtracting options. Only three levels are available in the multiplication and division options.

A nice feature of this program is that two people can play in competition, each player at his own level of difficulty. This enables a child to compete with an adult, yet still be able to win.

In the two-player game, high scores are separately recorded.

The second program, Robot Tables, is based upon a manic machine designed to frustrate the would-be mathematician.

The aim of the exercise is to create robots – in contrast to Sum Vaders, where the object was to destroy them.

The robots are produced from lumps of raw material that is fed in from the left-hand side.

Each lump contains a number. You have to decide whether that number is the next one in the sequence that is displayed below.

If you reject good material – a correct answer – or if you accept bad material – a wrong answer – the machine makes a damaged robot.

If the material is OK and it is accepted by you, a perfect robot is produced. If you correctly reject bad material it's recycled.

Points are credited for material recycled and each undamaged robot produced.

Bonus points are given for every sequence of ten robots that are created.

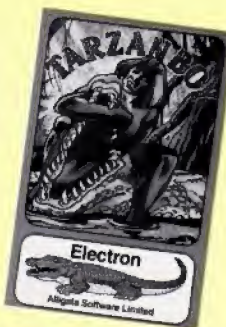
There are two modes for the game – learning and testing. In the learning mode the correct sequence of numbers is first displayed.

There are much longer response times and answers are displayed after each robot is made.

The testing mode is much faster and points are lost for incorrect responses.

I'd be happy to use the programs with most youngsters.

John Woollard



Tarzan's a right terror

Tarzan Boy
Alligata

THIS is a four screen arcade game set deep in the jungle. You take the part of Tarzan and the object is to find Jane.

Tarzan starts on the first screen and Jane is on the last. All you need to do is follow the arrow signs which will take you to her.

It might not sound difficult but, after an hour's play I had only managed to master

screen one – and that's the easiest.

All the dangers to be found in the jungle are here – gorillas will crush you, poisonous snakes will bite you and monkeys will drop coconuts on your head.

There are also waterfalls, rivers with floating logs and crocodiles to overcome.

In addition to these obstacles are the usual collection of mean-looking nasties.

Screen one involves ducking under a snake slithering down from a tree. Just past this are several lifts which take you up to different platforms.

Next you have to leap across a deep chasm to another platform. Watch out for the monkey with coconuts here.

Then jump the next chasm, up the lift and wait for a particularly nasty disembodied head with gnashing teeth to move to the correct position.

A couple of leaps and it's on to the next screen.

Tarzanboy is a Mode 2 game with a surprising number of moving objects. The Electron isn't noted for it's speed in this mode, but although Tarzan moves a little slowly, generally the animation is fast and smooth.

You won't be disappointed with Tarzan Boy. It's one of the best levels type of game released in the past couple of months. **Roland Waddilove**

A look at artificial intelligence

Talkback
Acornsoft

SOME while ago, when computers were things owned by rather strange people with more money than sense, I went to see a program called Eliza.

It was almost the first program I can remember seeing, and it made a great impression on me.

It seemed that the computer could be spoken to through the keyboard, and that it actually answered back in an intelligent manner.

Such programs are old hat now, but this cassette might be interesting for those keen on Artificial Intelligence, for it gives a marvellous insight into

the way such a program is written.

The main menu allows several options, one of which is to load a character from tape.

Two are provided, Astro and Bomb, and fans of the film and book Dark Star will have the opportunity to convince the bomb to return to the docking bay...

The accompanying booklet gives quite detailed instructions on how to decide the characteristics of other people, through the examples of Helen and Ron.

Creating or altering a character is fairly straightforward once a little familiarity is gained.

Keywords – including short phrases – and responses can

Golden battle

Beach-Head
US Gold

IT'S time to get your tin hats out and lead the assault on the enemy territory in Beach-Head.

This is one of the first conversions of their legendary Commodore 64 software, and it's great.

By moving the cursor which represents your forces, you can select one of two opening scenarios.

In the first you must guide your fleet through a narrow channel which is mined and is constantly criss-crossed by enemy torpedoes.

You score for every ship successfully negotiating the channel, but you inevitably lose a few ships.

The second option is to skip this section and proceed with a full complement of 10 ships to the anti-aircraft game.

This part of the game is great fun – enemy aircraft dive at your ship with guns blazing.

You now take on the role of gunner, moving the gun up, down, left and right, pumping out shells at wave after wave of fighters.

Speed and accuracy are

be entered or altered, so that fairly predictable conversations can be held, either between the two selected characters, or between the user and one of these.

The same keyword could provoke differing responses, but there is a priority system which decides which response should occur.

Actually, I found the conversations themselves to be rather repetitive and bland, and I was much more interested in the actual designing of characters.

The average Electron owner will probably get fed up with the possibilities fairly quickly, but those with a particular interest in this area will find it most worthwhile.

Phil Taylor

essential here, as with each hit from the enemy your damage points increase.

Each time the total reaches 20 damage points you lose another ship.

The enemy planes defeated, their fleet now comes into play.

My first attempts at lobbing shells at silhouettes of enemy vessels were disastrous.

I then noticed a small notice on the display informing me of how long or short my last shot was – aren't computers wonderful?

Having survived this mêlée, the surviving ships head for the beach and land their cargo of tanks – the number of tanks landed being proportional to the number of surviving ships.

The tanks must be guided through a tortuous maze of tank traps and gun emplacements.

Finally they reach their target – a huge gun mounted on top of a hill. The hill is protected by numerous guns which must be eliminated before the large gun is destroyed.

The graphics are excellent, and the fact that your performance on each level determines your fire-power on the next is a great idea.

James Riddell

This Lisp is a real snip

Lisp – ROM Cartridge Acornsoft

THIS was one of the first languages to appear on cassette for the Electron, and at last the full implementation is available on ROM cartridge for the Plus 1.

Priced at £29.95 it may seem expensive, but represents a considerable advance on the tape version reviewed in *Electron User*, February 1985.

The Lisp cartridge takes precedence on power-up, and typing VERSION tells us that this is version 5.

Turn on the garbage collector messages and force a collection, and we find we have 16.6k available in Mode 6. The extra memory available to the ROM based Lisp allows several enhancements – larger programs, graphics, neater recursive functions instead of loops, and less time garbage collecting.

Apart from these benefits of extra memory, how much more do you get for your well-earned money?

I knew that Lisp came on a 16k ROM, and was surprised

to see the cartridge contained 10 example programs, including games, educational programs, utilities and graphics. I was even more surprised when I couldn't find these programs in the ROM on disassembly. Efficient packing? Tokenising? No, the cartridge also contains a 16k serial ROM.

The examples are all taken from the Acornsoft book, which must be bought separately, and are loaded by selecting the ROM filing system, and *EXECing the file.

When you need, say, a sort function, this can be read from ROM as if it were typed from the keyboard, thus saving time and energy.

In a language where every machine has its own dialect, Acornsoft Lisp could well set some form of standard for micro-Lisps.

There's no PROG function, but Lisp being the friendly, flexible language that it is, this can be defined if you simply cannot do without GOTOs.

The OBLIST contains 130 identifiers, compared to 114 for the tape. Extra facilities include MODE, USR, binary

operators, TIME/CLOCK functions, warm or cold start from a break, and textual error messages.

The lack of a MODE command was the only serious drawback of the cassette, which included lots of functions (ONEP, ZEROP, ADD1, SUB1, CAR/CDR combinations) which are very easily defined in Lisp.

The VDU22 command can be used to change from one mode to another that use the same amount of RAM, say from 4 to 5, but not from Mode 6 to 3.

Since MODE has a delayed effect – it waits until the next Evaluate: prompt is displayed, there may still be occasions when VDU22 is needed, but in general MODE is a very useful function to have.

There is, however, a serious problem with this Lisp – it is extremely difficult to get hold of.

This is a great shame, because it is a superb implementation of an exceptionally interesting computer language, and 32k of ROM at this price is a real bargain.

Nick Rhodes

QUICK PEEKS

Whoopsy: Baby wants to play with his toys but Mummy wants him in bed. The baby distracts her by leaving whoopsies, but he must watch out for the patrolling potties. As you progress through the screens there are more toys to play with and more potties to contend with. (Shards)

Woodbury End: An illustrated adventure set in a quiet English village. You wake up in a darkened room tied with a rope and your memory a blank. In this real time adventure you have 20 days in which to unravel the sinister secrets of Woodbury End. (Shards)

Robin of Sherwood: It is over 100 years since the Normans conquered England, but rebellion still flares. Many English secretly believe a Hooded Man – a fugitive – would be chosen by Herne the Hunter to lead the English against the Norman tyranny. This time is now ready for the appearance of the Hooded Man – you. This Scott Adams' adventure includes features such as the stringing

together of commands and input of complete sentences. A free hint sheet is included with the game. (Adventure International UK)

Competitive Maths: Improve your mental arithmetic by beating the clock to a new high score. The idea is to answer as many quick-fire questions as possible within a minute. You can choose any of addition, subtraction, multiplication or division – with varying skill levels. (Duckworth)

Terrormolinos: A text adventure of a holiday spoof set on the Costa Brava, in which you must survive a two-week package holiday and return home with 10 snapshots to prove it. In this witty game every holiday disaster can and does occur. (Melbourne House)

Shuffle: A sliding block puzzle of the traditional type. You have to unscramble a puzzle made up of a number of blocks,

one of which is a blank. There are two sets of control keys. One set moves the blank and the other moves blocks into the blank. The idea is to solve the puzzle in the fewest possible moves and the shortest possible time. There are eight different puzzles with three levels of difficulty. (Budge)

West: It is the year 1884 somewhere in the Wild West. You are on the track of a notorious gang of robbers who have gone to ground near an abandoned mining town, deep in Indian territory. Your objective is to gain promotion to the rank of Marshal by outwitting the robbers and collecting as much of their loot as possible. (Talent Computer Systems)

Chuckee: An upgrade for Chuckie Egg which enables you to change the numbers and positions of the walls, ladders, seeds, geese and conveyors. In effect, you can design your own screens. However, you need to own a copy of the original before you can use Chuckee. (Bit Twiddlers)

**SPECIAL
OFFER!**

Order both
directly from
us and deduct
£1 from each.

THE BEST BBC MICRO SOFTWARE

* PRODUCED BY AN INDEPENDENT SOFTWARE HOUSE *

* TOP QUALITY MACHINE-CODE PROGRAMS *

ACORN
ELECTRON
BBC
MICRO



OVERDRIVE (32K)

£7.95

A highly-addictive multi-stage 3D race game. You steer your car left and right, accelerate and decelerate as the opposing cars weave about the road. There are five different stages including night, snow, desert and riverside scenes. To qualify for the next stage, you must finish in the top twelve. Incredible graphics give the impression that you really are taking part in the race. Highly recommended, and destined to become another top-seller for Superior Software.

**BOTH TITLES ARE NOW
AVAILABLE FOR THE B.B.C. MICRO AND
THE ACORN ELECTRON.**



SMASH AND GRAB (32K)

£7.95

An excellent and original arcade-style game in which you take the role of a robber aiming to snatch bags of gold from the bank. A policeman is after you... he is able to jump at you or squat down and try to hit you with his truncheon. You must also keep clear of the flying police cones and floating dustbin lids. There are three fascinating screens of action including play streets with bouncing balls, one-way streets, conveyor belts, traffic lights and police-boxes. A novel and amusing game.

WE PAY UP TO 20% ROYALTIES FOR HIGH QUALITY BBC MICRO AND ELECTRON PROGRAMS.



SUPERIOR SOFTWARE LTD.

Dept. EU12, Regent House,
Skinner Lane, Leeds 7
Tel: 0532 459453



OUR GUARANTEE

- (1) All our software is available before we advertise.
- (2) All our software is despatched within 48 hours by first-class post.
- (3) In the unlikely event that any of our software fails to load, return your cassette to us and we will immediately send a replacement.

MISSILE ATTACK

By MIKE WARMAN

MISSILE Attack is a version of the popular arcade game in which you must destroy incoming missiles with your laser bases.

If enough missiles get through — five or more — your city is destroyed and you along with it.

If you clear one screen you go to another with more and faster missiles and fewer shots with your lasers.

The program is run mainly in Mode 4 for speed but still uses colour and sound to good effect. The top ten hi-scores are displayed at the end of each game.

The program uses integer variables to increase speed. For this reason REM statements are also omitted.

The number of missiles can be changed by altering the value of N% at line 410

and their speed changed by altering the value of U% at line 510.

The title page and other double height characters are achieved by poking into the Mode 4 screen memory, which starts at &5800.

The micro looks at the character generator in ROM and pokes the value that it finds into the screen.

Each character square is defined by 8 bytes. PROCbigchars is used to do the screen poking.

The letters are held in data statements at lines 2390 and 2400.

Three different short tunes are played in the game. The notes to be used and their lengths are also stored in data statements.

To give the ten highest scores a short bubble routine is used — PROCsort, lines 2440 to 2510.

VARIABLES

A%	Number of shots left on laser 1.
B%	Number of shots left on laser 2.
C%	Number of shots left on laser 3.
D%	Number of missiles destroyed within a level.
E%	Number of missiles let through in a level.
F%	Used for recursive loops.
H%	Horizontal position of gun sights.
V%	Vertical position of gun sights.
J%	Total number of missiles let through.
L%	Level number.
N%	Number of missiles.
I%	$\frac{1}{3}$ of N%.
O%	$\frac{2}{3}$ of N%.
R%	Decides missiles' path.
U%	Speed of missiles.
W%	Flag to indicate whether laser can fire.
Q%	Horizontal position of base which is firing missiles.
m%	Starting address in screen memory for double height characters.
M%	Position in screen memory in which the computer is currently poking.
h%	Increment for M%.
S%	Start of character generator in ROM.
SCORE%	Total score.
X ()	x coordinate of missiles.
Y ()	y coordinate of missiles.
hi ()	Keeps hi scores.
NAS ()	Keeps names of hi scores.
Z%	Sound flag.

PROCEDURES

lose	Inputs name, calculates and displays hi score, restarts program.
keys	Checks key pressed, takes appropriate action.
fire	Fires laser from selected missile base and checks for hits.
one,two,three	Keeps tabs on number of missiles left.
win	Called when you destroy all the missiles, prints running score and level number.
bigchars	Pokes double height characters on to the screen.

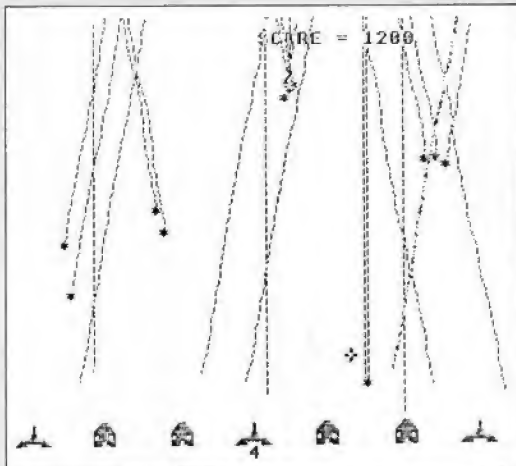
Full listing starts
on Page 18

From Page 17

```
10REM Missile Attack
20REM By M.I.Warman
30REM (c) Electron User
40REM
50ENVELOPE1,2,-15,-8,-3,
10,10,10,126,0,0,-126,126,1
26
60DIMhiZ(10):DIMNA$(10)
70DIMYZ(100):XZ(100):YZ=
```

```
1
80MODE4
90GCOL,4:V:VDU23;10,32;0;
0;0;
100GOSUB1720
110*FX12,15
120CLS
130VDU23;10,32;0;0;
140VDU19,7,7;0;
150EX=0
160ENVELOPE2,1,3,-5,2,3,4
,3,126,0,0,-126,126,126
170J1=0:LI=0:N1=0:SCORE=
```

```
0
180VDU23,224,0,0,0,24,24,
24,24,24
190VDU23,225,0,0,0,15,31,
63,127,255
200VDU23,226,0,0,0,224,24
0,240,252,254
210VDU23,227,60,60,126,25
5,255,255,0,0
220VDU23,228,0,0,3,7,15,3
1,63,127
230VDU23,229,0,0,192,224,
240,240,252,254
240VDU23,233,255,255,255,
255,255,255,255,255
250VDU23,230,127,127,7,7
9,127,126,126,126
260VDU23,232,24,24,24,231
,231,24,24,24
270VDU23,231,254,254,230,
230,254,126,126
280PRINTTAB(0,0); " "
290S1=0:DI=0:EX=0
300PRINTTAB(35,30):CHR#22
5;CHR#227;CHR#226;TAB(36,29
);CHR#224
310PRINTTAB(18,30):CHR#22
5;CHR#227;CHR#226;TAB(19,29
);CHR#224
320PRINTTAB(1,30):CHR#225
;CHR#227;CHR#226;TAB(12,29);
CHR#224
330PRINTTAB(7,30):CHR#230
;CHR#231;TAB(7,29);CHR#228;
CHR#229
```



```
340PRINTTAB(13,30):CHR#23
0;CHR#231;TAB(13,29):CHR#22
8;CHR#229
350PRINTTAB(24,30):CHR#23
0;CHR#231;TAB(24,29):CHR#22
8;CHR#229
360PRINTTAB(30,30):CHR#23
0;CHR#231;TAB(30,29):CHR#22
8;CHR#229
370PRINTTAB(20,1);"SCORE
= 000"
380VDU5
390GCOL,4,3
400VZ=500:NZ=640:MOVEHZ,V
Z:PRINTCHR#232
410NZ=RND(6)+17+(2*LI)
420IFLX(7)THENNZ=RND(6)+29
430IZ=INT(NZ/3):OZ=INT(2*
NZ/3)
440IFAZ(4)THENAZ=4
450AZ=10-LI:IZ=10:CZ=10
460IFAZ(4)THENAZ=4
470FORFX=0T0NZ
480XZ(FX)=RND(1000)+160
490YZ(FX)=RND(140)+1000
500NEXT
510UZ=5+(2*LI)
520IFLX(7)THENMUZ=18
530KX=22-(2*LI)
540IFLX(7)THENMUZ=21:KZ=6
550REPEAT
560AS=INKEY$(0):IFAS(">")
HENPROCKEYS
570FORFX=0T0NZ:PLOT69,XZ(
FX),YZ(FX):NEXT
```

```
580RZ=RND(2)
590IFRZ=2THENFORFX=0T0LX:
XZ(FX)=XZ(FX)+2:NEXT
600RZ=RND(2)
610IFRZ=1THENFORFX=0T0NZ:
XZ(FX)=XZ(FX)-2:NEXT
620AS=INKEY$(0):IFAS(">")
HENPROCKEYS
630FORFX=0T0NZ:YZ(FX)=YZ(
FX)-UZ:NEXT
640AS=INKEY$(0):IFAS(">")
HENPROCKEYS
650FORFX=0T0NZ
660IFVZ(FX)<28ANDYZ(FX)>K
ZTHENVDU19,7,5;0;IEX=EX+1:S
OUND1,2,10,14*VZ:FORFX=0T0L
000:NEXT:VDU19,7,7;0;
670NEXT
680IFVZ+EX)=STHENPROCLOSE
:CLS:GOTO120
690UNTILDI+EX=NZ+1
700PROCWin:CLS:GOTO200
710DEFPROCLOSE:VDU4:PRINT
TAB(7,14);"YOU HAVE BEEN DE
STROYED":VDU19,7,12;0;
720RESTORE2430
730FORFX=0T06
740READa,b
750SOUND1,-15*VZ,a,b*VZ
: SOUND1,0,0,2*VZ
760NEXT
770FORFX=0T020000:NEXT
780VDU19,7,7;0;CLS
790UNTIL1=1
800VDU4:PRINTTAB(10,10);"
```

```
YOU HAVE LOST"
810VDU23;10,32;0;0;0;
820PRINTTAB(3,16);"The mi
ssiles fired at your city b
y alien attackers have su
cceeded in their attempts.Y
ou have been unable to stop
enough getting through a
nd have perished along with
the rest of the city"
830SCOREX=SCORE+S1:PRINT
TAB(3,24);"SCORE = ";SCOREX
840FX21,0
850IFSCOREX>hiZ(10)THENP
RINTTAB(3,27);"Input Name "
:INPUTNA$(10):hiZ(10)=SCOR
EX
855IF LEN(NA$(10))>16THEN
PRINTTAB(14,27);"
":GOTO850
860FORFX=10T02STEP-1
870IFhiZ(FX)>hiZ(FX-1)THE
NPROCsort
880NEXT
890CLS:RESTORE2400
900aZ=ASC30:nZ=0
910REPEAT
920READa$
930IFVALa$>0THENaZ=VALa$:
nZ=0:GOTO960
940PROCbigchars(ASC(a$))
950nZ=nZ+0
960UNTILa$=" "
970RESTORE2410
980FORFX=0T05
```


Missile Attack listing

```

990READ,ds SOUND1,-15*Z,      :PRINTAB(2,1),A2;VDU5
c,d,a*ZZ                          1430IFAZ=8THENWZ=1
1000SOUND1,0,10,2*Z              1440ENDPROC
1010NEXT                          1450DEFPROCtwo
1020FORFX=1TO10                  1460QZ=628
1030PRINTAB(8,6,(2*FX));h        1470IFBZ=8THENBZ=8;-1:VDU4
1X(FZ);TAB(14,6+(2*FX));".      :PRINTAB(19,31);BZ;VDU5
." ;TAB(20,6+(2*FX));NA$(FZ)    1480IFBZ=8THENWZ=1
1040NEXT                          1490ENDPROC
1050VDUI9,7,14;0;                1500DEFPROCthree
1060PRINTAB(2,30);"PRESS        1510QZ=1160
'a' TO HAVE ANOTHER GO";         1520IFCX=8THENCX=1:VDU4
1070A$=6E$;                       :PRINTAB(36,31);CX;VDU5
1080IFAS(")*A"THEN1070           1530IFCX=8THENWZ=1
1090VDUI9,7,7;0;                 1540ENDPROC
1100ENDPROC                       1550DEFPROCwin:VDU4
1110END                            1560VDU23;10,32,0;0;
1120DEFPROCkeys                   1570VDUI9;0;0;19,7,3;0;
1130IFAS="B"ORAS="M"ORAS="      1580LZ=LZ+1;J3=J3+XZ
M"THENPROCfire:ENDPROC          1590RESTORE2420
1140MOVEH,VZ:PRINTCHR#232        1600FORX=BTQ7
1150IFAS="X"THENHX=HX+70         1610READa,b
1160IFAS="I"THENWZ=HX-70         1620SOUND1,-15*Z,a,b*4*Z
1170IFAS=";"THENVZ=VZ+70         :SOUND1,0,0,1
1180IFAS="/"THENVZ=VZ-70         1630NEXT
1190MOVEH,VZ:PRINTCHR#232        1640CLS:VDU4:PRINTAB(3,9)
1200ENDPROC                       "You have destroyed all the
1210DEFPROCfire                   incoming missiles";
1220MOVEH,Z-VZ,VZ:PRINTCHR#      1650SCOREZ=SCOREZ+SZ
233;CHR#233                      1660IFJ3=8THEN1670 ELSEPR
1230MOVEH,Z-VZ,VZ+32:PRINTC      NT" apart from "J3;" which
HR#233;CHR#233                   got through"
1240IFAS="B"THENPROCone         1670PRINTAB(3,11);
1250IFAS="M"THENPROCtwo          "You now go on to the next l
1260IFAS="M"THENPROCthree        evel which is level number "
1270IFWZ=1THENWZ=0:GOTO137      ;LZ;
0                                  1680PRINTAB(10,16);"Score
1280SOUND1,1,10,12*Z:VDUI       so far = "SCOREZ
9;10;19,7,4;0;                  1690PRINTAB(10,18);"Score
1290MOVEQZ,90;DRAWHX,VX         in last round = "SZ
1300FORFX=BTQZ                    1700FXZ1,0
1310IFABS(Z\FX)-HX(47 AN        1710PRINTAB(2,30);"Press
DABS(Y\FX)-VZ(47 THEN MOV       any key to continue";6=6E$
EZ(FX)-16,Y\FX):PRINT"*";      VDUI9,7,7;0;:ENDPROC
Y\FX)-48;OZ-OX+1;SZ=SZ+10       1720REIN out routine
0:SOUND1,2,0,5*Z                 1730RESTORE2390
1320NEXT                          1740SOUND1,1,10,4*Z
1330VDU4:PRINTAB(20,1);SZ        1750WZ=b$9D;nZ=0
1340VDU5                          1760REPEAT
1350MOVEQZ,90;DRAWHX,VX         1770READA$
1360VDUI9;0;0;19,7,0;0;         1780IFAS=";"THEN1820
1370MOVEH,Z-VZ,VZ:PRINTCHR#     1790IFVAL(A$)=8THENWZ=VAL
233;CHR#233                      A$;nZ=0:GOTO1820
1380MOVEH,Z-VZ,VZ+32:PRINTC     1800PROCbigchars(ASC(A$))
HR#233;CHR#233                  1810nX=nX+B
1390ENDPROC                       1820UNTILAS="!"
1400DEFPROCone                   1830MOVEB,300;MOVE100,300
1410QZ=90                         :PLOT85,550,900
1420IFAT(8)THENAZ=1:VDU4        1840MOVE300,450;MOVE800,45
1430IFAZ=8THENWZ=1

```

```

1800MOVE300,1000;MOVE800,1
000;PLOT85,550,780
1900PRINTAB(8,30);"Press
any key";
1970REPEAT
1800FORFZ=1T07
1970VDUI9,7,FZ;0;
1900FORGZ=0T01000;NEXT
1910NEXT
1920UNTILINKEY#(0);""
1930VDUI9,7,7;0;
1940MODE1
1950VDU2;10,32,0;0;0;
1960COLOUR2(13,4)
;"MISSILE ATTACK"
1970COLOUR3
1980PRINTAB(3,9);"In miss
ile attack you are in charg
e of the defences of your
race's last city.You have th
ree laser bases each of whi
ch can fire only a certain n
umber of times.You must use
these to destroy incoming
missiles";
1970PRINT" which have been
launched from a hostile ali
en space ship overhead"
2000PRINT" You control t
he firing of the laser bea
ms by positioning a gun s
ight and selecting a laser
"
2010PRINT""Do you want so
und effects during the g
ame (Y/N)";
2020A$=GET$
2030IFA$="Y"THENZI=1
2040IFA$="N"THENZI=0
2050IFAC$="Y"ANDAC$>"N"THE
N 2020
2060COLOUR1
2070COLOUR1
2080PRINTAB(4,31);"PRESS
ANY KEY TO SEE CONTROLS";
2090B$=GET;CLS
2100COLOUR3
2110PRINTAB(3,5);"You use
the following controls to
move the aiming sight ar
ound the screen:"
2120COLOUR1
2130PRINTAB(3,9);"I - Mov
e to left"
2140PRINTAB(3,11);"X - Mo
ve to right"
2150PRINTAB(3,13);"* - Mo
ve up"
2160PRINTAB(3,15);"? - Mo
ve down"

```

```

217BCOLOUR3
218BPRI(NTTAB(3,18));"To fire a shot from each of the three laser bases press the keys B , N , or M"
219BPRI(NTTAB(3,21));"As you move from screen to screen the missiles become more numerous and they increase in speed.The amount of shots that you have also becomes less."
220BPRI(NTTAB(3,25));"It takes a total number of five missiles to destroy your city"
217BCOLOUR2
222BPRI(NTTAB(4,31));"PRESS ANY KEY TO START GAME";i=6;GET
223MODE4
224RETFN
225DEFFPROCbighchars(aZ)
226BIFaZ=1THENaZ=32
227B5i=6BFF00+(aZ+B)
228BZi=aZ+iZ
229BFORFX=sZTOiZ+3
230B?FX=?FX;?(NZ+1)=?FX
231BZi=NZ+2
232BNEXT
233BFX=NZ+312
234BZi=FX+2+4TOiZ+7
235B?FX=?FX;?(NZ+1)=?FX
236BZi=NZ+2
237BNEXT
238BENDPROC
239BODATA,i,s,a,i,l,e,e,a,t,t,a,c,k,i
240BODATA,i,-,S,c,o,r,e,s
241BODATA100,1,96,,75,100,,25,100,1,96,1,100,2
242BODATA100,,5,100,1,100,1,100,1,100,1,100,1,100,2
243BODATA60,1,60,1,60,1,56,1,40,1,40,2
244BDEFFPROCsort
245BZi=hI(FZ)
246BhI(FZ)=hI(FZ-1)
247BhI(FZ-1)=VZ
248BQZ=N4(FZ)
249BNA4(FZ)=NA4(FZ-1)
250BNA4(FZ-1)=N4
251BENDPROC

```

This listing is included in this month's cassette tape offer. See order form on Page 61.

CUMANA

Special Price offer For Electron Users!

Acorn electron microcomputer £94.95
Cumana double density disk interface £74.95*

CS100M 1 × 40 track single sided 5 1/4" disk drive £114.95
CD200M 2 × 40 track single sided 5 1/4" £209.95

CS354 1 × 80 track double sided 3 1/2" £109.95
CD358 2 × 80 track double sided 3 1/2" £199.95

CS351 40 track single sided 3 1/2" £99.95
CD352 2 × 40 track single sided 3 1/2" £179.95

All prices inclusive of VAT + delivery.
* Disk interface requires Acorn plus 1 expansion unit

ORDER FORM (ELECTRON OFFER) ELECTRON USER NOVEMBER

To: CUMANA LIMITED, THE PINES TRADING ESTATE, BROAD STREET, GUILDFORD, SURREY GU3 3BH. Tel: 0483 503121.

I wish to order (Qty)

Acorn Electron Microcomputer at £94.95 ☐
I enclose cheque/PO for

Please Tick

CS100M S/S 5 1/4" Disk Drive at £114.95 ☐

CD200M S/S 5 1/4" Disk Drive at £209.95 ☐

CS351 3 1/2" S/S Disk Drive at £99.95 ☐

CS354 D/S 3 1/2" Disk Drive at £109.95 ☐

CD358 D/S 3 1/2" Disk Drive at £199.95 ☐

CD352 3 1/2" S/S Disk Drive at £179.95 ☐

Cumana Double Density Disk Interface at £74.95 ☐

or debit my access/visa card no.

*Delete as appropriate

NAME

ADDRESS

Tel:



Ready Reference

Collect the Electron User Ready Reference charts – and have all the facts at your fingertips!

MODES

The Electron has 7 modes. Five can support both text, letters, and graphics. Two are text only.

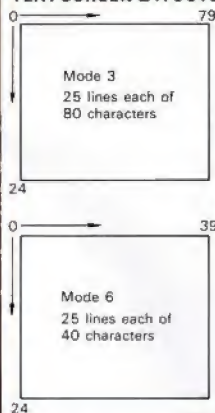
Function	Mode
Graphics	0, 1, 2, 4, 5
Text	3, 6

COLOURS

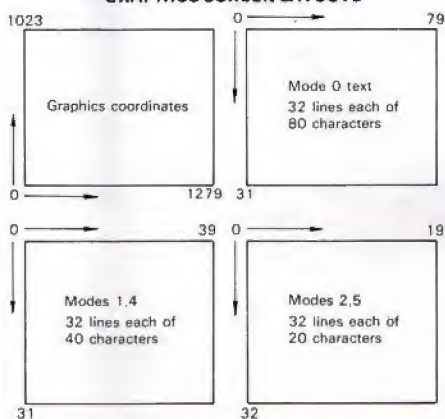
The Electron can have up to 16 colours. 8 flashing, but only Mode 2 allows all 16 on the screen at one time. Other modes have to make do with fewer.

Colours	Mode
2	0, 3, 4, 6
4	1, 5,
16	2





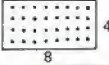
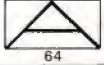
TEXT SCREEN LAYOUTS



GRAPHICS SCREEN LAYOUTS



GRAPHICS MODES SCREEN ATTRIBUTES

Mode	Pixel size	Letter size
0	 4	 32
1, 4	 4	 32
2, 5	 4	 32

Get set, Santa!

By
**STEPHEN
MARTIN**

To stop all the good (?) little children of the world seeing what gifts they will receive before Christmas Santa hid them all in a vast maze.

During the long summer months some extremely crafty characters have gained illegal entry into the maze and are having a wonderful time playing with presents they don't deserve.

You have to guide Santa through the maze and collect the presents.

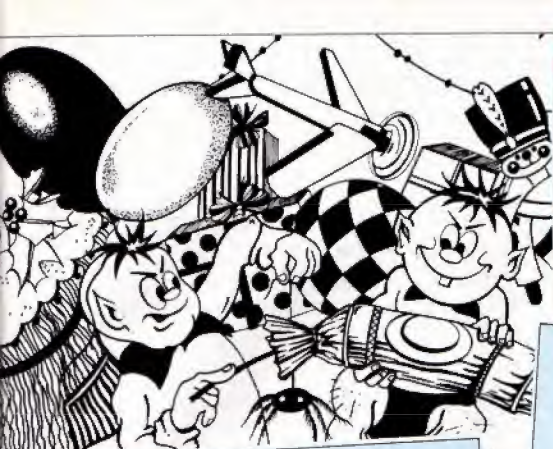
But be careful. There is no telling what the frustrated little fiends will do to Santa if they get hold of him.

```
10REM Get Set Santa
20REM By S.Martin
30REM Interrupt Music
40REM By R.A.Waddilove
50REM (C) 1985
60REM Electron User
70MODE$=DIM hiX(10),na$(10):FORT2=1TO10:hiX(1X)=200:na$(1X)="STEVO":NEXT:PROCmusic:PROCscreen
80CLS:PRINTTAB(0,4):"MUSIC?"AT 10:IFna$(1X)=0:PRINT"STEVO":NEXT:PROCmusic:PROCscreen
90VDU23,1,0;0;0;0:PROCinstruments:ONERRORMODE6:REPORT:PRINT"at line "ERL:END
100PROCtable:lines3=3:score1=0:level1=1
110PROCmusic:RESTORE:PROCinitmaze:PROCinitvar:PROC
```

```
nitgame
120keyX=(level1X2)+3:LX=LEN(STR$(score2)):PROCscreen:PRINTTAB(5,23):"TAB(5,23):keyX:TAB(5,26):livesX:TAB(13,26):levelX:TAB(16-LX,23):scoreX:PROCgame
130DEFPROCscreen:DIM R% 90:FORT=0TO2STEP2:PX=QZ:COPYT
140.mainloop:LDX#C8:LDA#&B1:LDY#FF:JSR&FFF4:TYA:BN:Epause:JSRghosties:JSRwindow:RTS:.pause:LDA#21:LDX#0:JSR&FFF4:JSR&FFB:JMPmainloop
150.window:LDX#15:.row:JSRstart:CLC:LDA#70:ADC#90:S:TA#70:LDA#71:ADC#0:STA#71:LDA#74:CLC:ADC#25:STA#74:LDA
```

```
#75:ADC#0:STA#75:DEX:BPLrow:RTS
160.start:LDY#10:.fill:STY#0F:LD#74):Y:CMPI:BEQbrick:CMPI:BEQdoor:CMPI:BEQman:CMPI:BEQghost:CMPI:BEQkey:JMPspace:ret:LDY#0F:D:Y:BPLfill:RTS
170.brick:LDA#A3:STA#72:LDA#00:STA#73:JSRpaint:JSRinc:JMPret.man:LDA#C3:STA#72:LDA#00:STA#73:JSRpaint:JSRinc:JMPret.doors:LDA#B3:STA#72:LDA#00:STA#73:JSRpaint:JSRinc:JMPret
180.ghost:LDA#D3:STA#72:LDA#00:STA#73:JSRpaint:JSRinc:JMPret.key:LDA#E3:STA#72:LDA#00:STA#73:JSRpaint:JSRinc:JMPret.space:LDY#1
```

```
5:.loop2:LDA#0:STA#70):Y:D:Y:BPLloop2:JSRinc:JMPret
190.paint:LDY#15:.loop:LDA#72):Y:STA#70):Y:DEX:BPLloop:RTS:.inc:LDA#70:CLC:ADC#16:STA#70:LDA#71:ADC#0:STA#71:RTS
200.moveghost:JSR&AF51:LDA#2A:CMPI#200:BCCsmall:JSR&AF51:LDA#2A:STA#83:.small:LDY#0:LDA#82:STA#80):Y:.fg:LDA#83:CMPI#200:BCCover:JSRup:.over:CMPI#150:BCCover1:JSRdown:.over1:CMPI#100:BCCover2:JSRleft:.over2
210CMP#50:BCCheck:JSRright:.check:LDY#0:LDA#80):Y:CMPI#0:BEQnegative:CMPI#3:BEQbr:JSRchangedirec:JSR&AF51:LDA#2A:STA#83:JMPend2:.br
```



VARIABLES

keys%	Number of keys left to collect.
loc%	Location holding the start address of the maze segment currently being printed in the window.
man%	Location of man in maze.
X%	X coordinate of man.
Y%	Y coordinate of man.
xmax%	Maximum distance scrolling can continue right.
ymin%	Maximum distance of downwards scrolling.
xmin%	Minimum distance scrolling can continue left.
ymin%	Minimum distance of upwards scrolling.
score%	Score.
level%	Level reached.
lives%	Number of lives left.

ARRAYS

nm\$()	Holds top 10 names.
hi\$()	Holds top 10 scores.

PROCEDURES

assemble	Pokes in machine code.
up	Moves man up and scrolls.
down	Moves man down and scrolls.
left	Moves man left and scrolls.
right	Moves man right and scrolls.
key	Updates the number of keys left and increases score.
screen	Sets up the screen display.
dead	Lose a life. All gone? Hiscore?
table	Prints high score table.
initmaze	Pokes in the maze.
initvari	Initialises variables.
initgame	Sets up memory locations used.
game	Calls the machine code and updates your man until you are dead.
input	Name input routine (uses Osword with A=0).
welldone	Congratulations and increment level.

The Break key definition is corrupted because I have used the page of memory allocated to the function key definitions. Press Escape after Break or Ctrl + Break at the same time then OLD (Return), to enable normal editing. Type in the data carefully otherwise you may have an impossible game.

Get Set Santa listing

```

: LDA#1: STA#7E: RTS
220: negative: LDY#0: LDA#8
0: Y: finish: STA#82: end2: L
DA#4: LDY#0: STA#80: Y: RTS
230: changedirec: LDA#83: CH
P#200: BCSdown: CMP#150: BCSup
: CMP#100: BCSright: CMP#150: BC
S1 left: JSR#AF51: LDA#2A: STA#6
3: RTS: up: SEC: LDA#80: SBC#25
: STA#80: LDA#81: SBC#0: STA#81
: RTS
240: down: CLC: LDA#80: ADC#2
5: STA#80: LDA#81: ADC#0: STA#8
1: RTS: right: CLC: LDA#80: ADC
#1: STA#80: LDA#81: ADC#0: STA#
81: RTS: left: SEC: LDA#80: SBC
#1: STA#80: LDA#81: SBC#0: STA#
81: RTS
250: ghosties: LDA#84: STA#8
0: LDA#85: STA#81: LDA#86: STA#
82: LDA#87: STA#83: JSR#movegho
st: LDA#80: STA#84: LDA#81: STA
85: LDA#82: STA#86: LDA#83: ST
A#87
260: LDA#80: STA#80: LDA#89: S
TA#81: LDA#8A: STA#82: LDA#8B:
STA#83: JSR#moveghost: LDA#80:
STA#89: LDA#81: STA#89: LDA#82
: STA#8A: LDA#83: STA#8B
270: LDA#8C: STA#80: LDA#8D: S
TA#81: LDA#8E: STA#82: LDA#8F:
STA#83: JSR#moveghost: LDA#80:
STA#8C: LDA#81: STA#8D: LDA#82
: STA#8E: LDA#83: STA#8F
280: LDA#76: STA#80: LDA#77: S
TA#81: LDA#78: STA#82: LDA#79:
STA#83: JSR#moveghost: LDA#80:
STA#76: LDA#81: STA#77: LDA#82
: STA#78: LDA#83: STA#79
290: LDA#7A: STA#80: LDA#7B: S
TA#81: LDA#7C: STA#82: LDA#7D:
STA#83: JSR#moveghost: LDA#80:
STA#7A: LDA#81: STA#7B: LDA#82
: STA#7C: LDA#83: STA#7D: RTS
300: music: PHP: PHA: TIA: PHA
: TIA: PHA: LDA#80: LD#0&FA: LD
Y#FF: JSR#FFFA: CPI#10: BMI no
space: LDY#0: LDdata: Y: STA#s
ound+4: DEY: LDdata: Y: STA#s
ound+6: LD#7: LD#sound MOD256
: LDY#sound DIV256: JSR#FFFF1:
DEC#80: DEC#80: BNE#space: LD
A#192: STA#80
310: nspace: PLA: TAY: PLA: T
AX: PLA: PLP: RTS: sound: EQU0%
00000000: EQU0%00000000
320: RTS: j: NEXT: sound=1: so
und-2: is-1: %22=music MOD25
6: %22=music DIV256: DSCL1"
FX13,4": DSCL1"FX16,0": %40=
192: ENDPROC
330: DEFPROCmusic: DIM data
: RESTORE#950: FORT#192: TOL
STEP-1: READJ: Y: %2data=J: NE
XT: ENDPROC
340: DEFPROCinitmaze: FORT#
0T0674: READJ: Y: %2#900-DZ: NE
XT: FORT#4BA3T06BF2: READJ:
DZ=EVAL("%*08"): Y: %2=DZ: NEXT
: ENDPROC
350: DEFPROCinitvari: loc#k
907: man#4925: Y: %2=2: ma
n#19: man#19: Y: %2=2: ymi
n#3: ENDPROC
360: DEFPROCinitgame: %70=k
C0: %71=k5A: %74=locX MOD 2
56: %75=locX DIV 256
370: FORT#0T102STEP1: pos#k=

```


ARE you the proud owner of a Plus 1? If you are then read on. If you aren't go and get yourself one - it's a superb piece of kit and you'll need it to follow this article.

You'll also need a set of joysticks because this month we'll be looking at how to use joysticks in your own programs.

Do you remember the alien programs in the Program Probe feature in the September 1984 and April 1985 issues of *Electron User*.

In the earlier article we used a short program from Ian Rodgers to illustrate how we could control an object's screen movement courtesy of the cursor keys.

The later article used the same program as the basis for one illustrating collision detection. Program 1 shows the result.

This month we'll be adding yet more code to the program allowing the alien to be guided by joystick rather than by cursor keys.

The reason you need the Plus 1 is that the Electron by itself won't support the use of joysticks. You have to have an interface to allow your joysticks to speak to the micro.

The Plus 1 comes with, among other goodies, an analogue interface.

You needn't worry too much about what exactly an analogue interface is. For the purposes of this article it's the thing that you plug your analogue joysticks into!

Notice that you use

PLUS 1

The key to joystick control of your programs

By NIGEL PETERS

analogue joysticks with the Plus 1. Some other interfaces, such as the ones from Power or First Byte, use switched or Atari-style joysticks.

These won't work with the Plus 1, and vice versa, so make sure that you get the correct joystick for your interface.

When you've got your joystick plugged into the analogue port of the Plus 1 the joystick can now "talk" or send signals to the Electron.

And, like everything else inside the computer, it does it using numbers.

It doesn't say "up". It sends a number that stands for "go up". The program must be able to read this number and do the appropriate movement.

You're not just stuck with

one line of communication. The analogue port allows whatever is attached to it to send messages along four different channels should it want to.

It looks at each of these analogue channels in turn, taking information from them and passing it to the Electron in numeric form.

These numbers, which we'll see in a moment, range from 0 to 65280, the values going up in steps of 256 at a time.

Each channel returns a value and the value returned depends on the position of the joystick at the moment that the Electron looks at, or accesses, that channel.

Now if the numbers vary according to what the joystick

```
10 REM PROGRAM 11
20 MODE 0
30 VDU 23,1,0;0;0;0;
40 PRINT "Mess about wit
h your joysticks!"
50 REPEAT
60 PRINT TAB(5,0)*ADVAL(
1)*TAB(15,0)*ADVAL(2)*TAB(2
5,0)*ADVAL(3)*TAB(35,0)*ADV
AL(4)*
70 PRINT TAB(0,10)*ADVAL
(1),ADVAL(2),ADVAL(3),ADVAL
(4)
80 UNTIL FALSE
```

Program 11

is doing, then it's probably occurred to you that if we could get at these numbers from our programs we could use them to control the little alien from Program 1.

He could change his position on the screen, his movement depending on what value was returned from a particular channel.

Program 11 shows how we can use the ADVAL command in Basic programs to read values from the analogue port.

ADVAL(n) returns the value on channel n of the analogue port.

The number n varies from 1 to 4 according to which channel you want to look at. Before you run the program, make sure that you've got your joystick plugged in.

At first all you get is a series of boring numbers, but as you wiggle your joystick about you'll see that these numbers change.

In fact they're varying

```
10 PROGRAM 1
20 REM COLLISION DETECTI
ON
30 REM BASED ON A PROGRA
M BY IAN RODGERS
40 REM use cursor keys
50 MODE1
60 VDU23,1,0;0;0;0;
70 VDU23,224,24,60,126,2
19,126,36,66,129
80 X=0
90 Y=0
100 PROCObstacle
110 COLOUR 120
120 REPEAT
130 PROCgame
140 UNTIL check=2
```

```
150 PROCbang
160 REPEAT UNTIL FALSE
170 DEFPROCbang
180 CLS
190 SOUND 0,-15,6,40
200 PRINT TAB(20,15)*"BANG"
210 ENDPROC
220 DEFPROCObstacle
230 VDU 24,416;800;600;99
2;
240 GCOL 0,130;CLB
250 ENDPROC
260 DEFPROCgame
270 check=POINT'(X*32+16)
,(1023-Y*32-16))
280 IF check<2 THEN PRIN
TTAB(X,Y)CHR$224
```

```
290 FOR delay=1 TO 100:NE
XT
300 IF INKEY(-122) THEN X
=X+1:PRINTTAB(X,Y)*"IF
X=39 THEN X=38
310 IF INKEY(-26) THEN X=
X-1:PRINTTAB(X,Y)*"IF X
=-1 THEN X=0
320 IF INKEY(-42) THEN Y=
Y+1:PRINTTAB(X,Y)*"IF Y
=31 THEN Y=30
330 IF INKEY(-58) THEN Y=
Y-1:PRINTTAB(X,Y)*"IF Y
=-1 THEN Y=0
340 SOUND 1,-15,X,1
350 SOUND 1,-15,32-Y,1
360 ENDPROC
```

Program 1

From Page 25

according to the position of the joystick.

Exactly which channel is affected by which joystick movement depends on the joystick you're using. We'll come to that in a moment.

First, however, we'll do something to make the values returned from an ADVAL() more manageable.

You'll remember that I said earlier that the values returned from the channels go up in steps of 256.

I don't know about you, but I find these large numbers rather confusing, so I use DIV 256 to cut them down to size.

I haven't lost any information, just cut the figures down to a more manageable size. Program III shows this in practice:

```
10 REM PROGRAM III
20 MODE 0
30 VDU 23,1,0;0;0;0;
40 PRINT "Notice where t
he 0s and 255s occur"
50 REPEAT
60 PRINT TAB(5,8)*ADV(
1)*TAB(15,8)*ADV(2)*TAB(2
5,8)*ADV(13)*TAB(35,8)*ADV
AL(4)*
70 PRINT TAB(8,10) ADV(
1) DIV 256,ADV(2) DIV 25
6,ADV(3) DIV 256,ADV(4)
DIV 256
80 UNTIL FALSE
```

Program III

Now when you wiggle the joystick about you should notice that when the joystick is in its extreme positions of left and right, up and down, the values returned by ADVAL() are 0 and 255.

Again, which position returns which value on which channel depends on your joysticks. Experiment and see.

I use a Voltmax joystick, one of the best around. With this when I run Program III channel 1 returns a value of 0 when the joystick is furthest to the right and 255 when it's at the left.

Channel 2 gives the value of 255 when the stick is furthest forward and 0 when it's furthest back.

A little thought shows that these numbers can be used to control the little man. A 0 on

channel 1 means he is to go right, a 255 that he's to go left. Similarly a 255 on channel 2 would have him going upwards, a 0 sending him down.

Program IV spells out what each of the joystick positions does.

```
10 REM PROGRAM IV
20 REPEAT
30 IF ADV(1) DIV 256=0
THEN PRINT "Right"
40 IF ADV(1) DIV 256=2
55 THEN PRINT "Left"
50 IF ADV(2) DIV 256=2
55 THEN PRINT "Up"
60 IF ADV(2) DIV 256=0
THEN PRINT "Down"
70 UNTIL FALSE
```

Program IV

Remember, your joysticks may be slightly different. Perhaps right will be a 255 on channel 2 while left would be a 0 on the same channel. Experiment and see.

In case you're wondering what's happened to channels 3 and 4, the answer is that they're not needed with a single joystick.

They are used to take

information from a second joystick. Here, however, we're sticking to just one.

So now that we know what values are returned for the up, down, left and right positions of the joystick, we can use them in our alien program. Program V shows how it's done.

The main difference is that there are three new procedures.

PROCask is fairly straightforward. It just asks if you want to use keys or joysticks to control the little man.

Notice how it's mugged to allow only J, j, K or k as inputs.

If the answer is K or k then the logical variable *key* is set to TRUE and PROCgame will call PROCkey.

If you've read the previous articles then PROCkey should cause you no problems. It's just our old method of using the cursor keys to control the alien's movement. Now the code is put into a procedure instead of being part of PROCgame as it was in Program I.

It's PROCjoy, as you might expect, that uses the joystick to control the little man. It's

not hard to figure out how it works.

Compare the four lines 380 to 410 with the lines 440 to 470 and you'll see how ADVAL() replaces INKEY() in deciding which way the man goes.

With keys the man goes right if the right cursor key is pressed, giving INKEY(-122) as true.

With joystick control the man moves right when the joystick is furthest right, returning 0 from ADVAL(1) DIV 256.

Similarly ADVAL(n) DIV 256 takes the place of INKEY() with the other three directions.

So as you can see, using joysticks with the Plus 1 is quite simple, provided you check out which joystick direction gives which ADVAL() value.

Your joysticks may not be the same as mine. My up might be your down, with disastrous results.

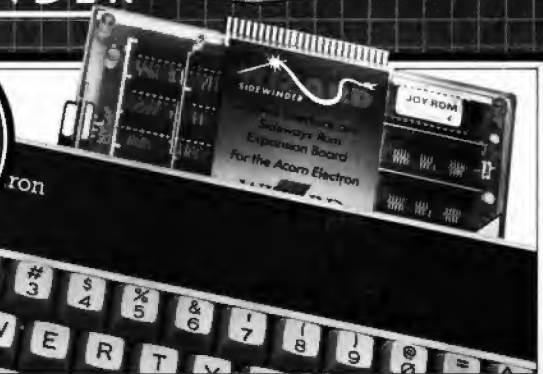
And that's where we'll leave it for this time, although don't be surprised if there's another sighting of aliens, joysticks and the Plus 1 in the near future.

```
10 REM PROGRAM V
20 REM JOYSTICK CONTROL
30 REM BY NIGEL PETERS
40 REM BASED ON A PROGRA
M BY IAN RODGERS
50 REM use cursor keys
60 REM or joystick
70 MODE1
80 VDU23,1,0;0;0;0;
90 VDU23,224,24,0,126,2
19,126,36,66,129
100 I=0
110 Y=0
120 key=FALSE
130 PROCask
140 PROCobstacle
150 COLOUR 128
160 REPEAT
170 PROCgame
180 UNTIL check=2
190 PROCbang
200 REPEAT UNTIL FALSE
210 DEFPROCbang
220 CLS
230 SOUND 0,-15,6,40
240 PRINT TAB(20,15)*BANG
250 ENDP
260 DEFPROCobstacle
270 VDU 24,416;800;608;99
280 GCOL 0,130;CLG
290 ENDP
300 DEFPROCgame
310 check=POINT(X*32+16)
(1023-Y*32-16)
320 IF check<2 THEN PRIN
TTAB(X,Y)CHR$(224
330 IF key=TRUE THEN PROC
key ELSE PROCjoy
340 SOUND 1,-15,X,1
350 SOUND 1,-15,32-Y,1
360 ENDP
370 DEF PROCjoy
380 IF ADV(1) DIV 256=0
THEN X=X+1:PRINTTAB(X,Y)
* IF X=39 THEN X=38
390 IF ADV(1) DIV 256=2
55 THEN X=X-1:PRINTTAB(X,Y)
* IF X=-1 THEN X=0
400 IF ADV(2) DIV 256=2
55 THEN Y=Y+1:PRINTTAB(X,Y)
* IF Y=-1 THEN Y=0
410 IF ADV(2) DIV 256=0
THEN Y=Y+1:PRINTTAB(X,Y-1)
* IF Y=31 THEN Y=30
420 ENDP
430 DEF PROCkey
440 IF INKEY(-122) THEN X
=X+1:PRINTTAB(X,Y) * IF
X=39 THEN X=38
450 IF INKEY(-26) THEN X=
X-1:PRINTTAB(X,Y) * IF X
=-1 THEN X=0
460 IF INKEY(-42) THEN Y=
Y+1:PRINTTAB(X,Y-1) * IF Y
=31 THEN Y=30
470 IF INKEY(-58) THEN Y=
Y-1:PRINTTAB(X,Y+1) * IF Y
=-1 THEN Y=0
480 ENDP
490 DEF PROCask
500 INPUT "Do you want to
use keys or joystick? K/J
" answer$
510 IF INSTR("JjKk",answe
r$)=0 THEN GOTO 500
520 IF answer$="K" OR ans
wer$="k" THEN key=TRUE
530 CLS
540 ENDP
```

Program V

THE NEW WIZARD SIDEWINDER

£39.⁹⁵
R.R.P.



Sidewinder Expansion Board

The very latest hardware development from Wizard, Sidewinder expands the potential of your Acorn Electron! Now you can enjoy your Electron games to the full by using Sidewinder in conjunction with the special Wizard Joy Rom. Joystick crashes become a thing of the past with Sidewinder!

Full through bus connection, exclusive to Sidewinder, allows other peripherals such as Plus 1 and disc drives to be used simultaneously, converting the Electron into a word processor! The additional Rom sockets provided by Sidewinder extend the user's choice to include all the latest Rom developments.

BBC Joy Stick Interface



The interface plugs directly into the existing analogue joystick port, converting the port to accept two Atari type joysticks. Now you can play all joystick compatible software.

£14.⁹⁵
R.R.P.

BBC Joy Rom

The Wizard Joy Rom allows the user to programme any game to be played with a joystick. All instructions are displayed in an easy to follow sequence on the monitor.

- 99% of commercial BBC software can now be used with any BBC compatible joystick!
- Joy Rom eliminates keyboard damage!
- Flight simulator games, or games that previously required an analogue joystick will now work with a switched joystick!
- Programmes requiring more than 5 keys can now be worked with a pair of joysticks!
- Unlike cassette based joystick programmes, Joy Rom resides in the computer, allowing instant access!
- High skill one player games can now be played by two people, creating hilarious situations!



Please rush me the following items:
BBC Joy Stick Interface, £14.95 per item ☐
Sidewinder Expansion Board, at £39.95 per item ☐
BBC Joy Rom, at £17.50 per item ☐

Your Name _____
Address _____

Post Code _____

Make your cheque or postal order Payable to
Wizard Development Co Ltd

WIZARD

Development Company Limited

Computer Hardware and Software

Alpha House, 10 Carver Street, Sheffield S1 4FS.

Telephone: (0742) 752912

Distribution by Eborac Electronics Limited, Penfold Lane,
Bedlington, North Humberside, YO18 5XR

Beginners



LAST month we learnt about the Basic functions **LEFT\$** and **RIGHT\$**. They were used to take specified numbers of characters from the left and right ends of strings respectively.

We also saw how they could be used to extract information held in the fields of a data string, but found they had limitations.

Have a look at the animal data held in Figure 1 and you'll see what I mean.

NAME	SPECIES	AGE	WEIGHT
TOM	CAT	3	7
IAN	RAT	2	1
ERIC	BAT	1	1

Figure 1: Animal data

If we try holding all the information about Tom the cat, Ian the rat and Eric the bat in three data strings we run into trouble when we want just part of the data, not all of it.

Take a look at Program 1, which uses **LEFT\$** to extract the name and species of the animals held in the data statements.

By now you should have no difficulty in figuring out how the program works.

It stores the three data strings in the array **record\$**. It then uses **LEFT\$** to extract the

```

10 REM PROGRAM 1
20 DIM record$(3)
30 FOR loop=1 TO 3
40 READ record$(loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT LEFT$(record$(loop),8)
80 NEXT loop
90 DATA "TOM CAT 3 7"
100 DATA "IAN RAT 2 1"
110 DATA "ERIC BAT 1 1"
    
```

Program 1

Let's round up the livestock with a few **LEFT\$**, **RIGHT\$** and **MID\$**

necessary information from the relevant array element each time round the loop.

Try modifying the program to get the species, age and weight. You should have no trouble if you use **RIGHT\$**.

However you will have trouble trying to get just a name and age or a species and weight using **LEFT\$** and **RIGHT\$**. Try it and see.

The problem arises because of the way the data is stored in the data strings.

Each string holds four pieces of information, each piece of information held in one of four fields.

Each of these fields is made up of a fixed number of characters, the whole data string consisting of 12 characters.

The first four characters are set aside for the animal's name, then a space, then three characters for the species, a space, the age, another space and then the weight. Figure 1 shows this in detail.

Strictly speaking we don't need the spaces between the fields, they're just there to make it more legible.

However we do need them to pad out a field if the information in it doesn't fill all the allocated spaces. In this case the name fields are four characters long.

However Ian and Tom are only three letters apiece. The

result is that a space is put in as character 1 to make the field the required length.

Using this method and **LEFT\$** and **RIGHT\$** it's easy to break off one or more fields from either end of a data string. But you can't get at the middle ones by themselves. You have to include the information at either end.

LEFT\$ and **RIGHT\$** are useful functions, but they're a bit clumsy. They'll take a specified number of characters from each end of a string but not from the middle.

And when we've got several bits of information in a string, often it's only the middle bits we want.

Of course there is a way

round all of this that avoids having to use string slicing at all. We can just store all the information we want in a number of arrays. Then we can pick and choose between arrays as necessary. Program 2 shows how it's done.

As you can see it works, giving us the species and weight for each of the animals, something we were unable to do before.

Try adjusting line 70 so it gives you the name and age of the animals. It's quite a flexible program.

The trouble is that it uses four arrays. In this case it's all right, but in practical applications using lots of records containing lots of different



Character position	1	2	3	4	5	6	7	8	9	10	11	12
Data	T	O	M		C	A	T		3		7	
	I	A	N		R	A	T		2		1	
	E	R	I	C		B	A	T		1		1

Figure 2: Character positions of **record\$(i)**



```

10 REM PROGRAM II
20 DIM names(3),species(
3),age(3),weight(3)
30 FOR loop=1 TO 3
40 READ names(loop),spec
ies(loop),age(loop),weight(
loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT names(loop)" th
e "species(loop)" weighs ";
weight(loop)" pound."
80 NEXT loop
90 DATA TOM,CAT,3,7
100 DATA IAN,RAT,2,1
110 DATA ERIC,BAT,1,1

```

Program II

pieces of information, these arrays grow and grow.

So memory becomes limited and the method impractical.

Now our previous method of storing information in the fields of a data string is very efficient in its use of memory, but not so flexible.

Wouldn't it be nice if there were a Basic command that allowed you to pick a number of characters from anywhere in a string, rather than having to start at either end as we had to with LEFT\$ and RIGHT\$?

In fact, we can do just that using the function MID\$. To see how it works, enter:

```

PRINT MID$("anystrings"
,4,6)

```

and you'll be rewarded with:

string

What's happened is that the MID\$ function has sliced off part of the string that you've given it in the brackets. The numbers following this string tell the micro where to start the slicing and how many characters it is to slice off.

In this case the string is *anystrings*. The figure 4 tells

the Electron to start slicing at the fourth character from the left, in this case an s.

The final figure tells it how many characters to take. Here it's 6, so we end up with:

string

Try doing that with LEFT\$ or RIGHT\$. As you can see, MID\$ allows us to take a number of characters from the middle of a string.

It's just what we need to get at the fields locked in the middle of a data string. Before we go on to that however, try playing around with MID\$ until you feel you understand it well.

Can you explain why:

```

PRINT MID$("anystrings"
,2,5)

```

produces:

nysr

as its result?

You can use variables inside MID\$. Enter:

```

strings="balloon"
beginning=2
length=3
PRINT MID$(strings,
beginning,length)

```

and you'll see that it's the same as:

```

PRINT MID$("balloon",2,3).

```

What happens if you ask MID\$ to give you more characters than there are left in the string? Try it and see.

```

PRINT MID$("pqrst",3,7)

```

seems to be asking for seven characters from "pqrst", starting at the letter r. The trouble is that, including the r, there are only three characters left in the string.

As you'll have seen if you typed it in, the Electron just gives you as many letters as there are remaining in the

string and leaves it at that.

What happens if you leave out the last number? What will you get if you enter:

```

PRINT MID$("abcde",2)

```

You've told the Electron you want to take some characters from "abcde". You've also told it where to start, at the second character, the letter b.

What you haven't said is how many you want. In this case, as before, the Electron just assumes that you want the rest of the string and gives you:

bcde

for your pains.

So, now we've got three ways of slicing strings. Without using your Electron, can you predict what the results of entering:

```

PRINT MID$("1234",2)
PRINT LEFT$("1234",2)
PRINT RIGHT$("1234",2)

```

will be? And can you explain the differing output?

As we saw before, we can use variables inside the brackets of a MID\$. This can be very useful and gives us a very powerful method of slicing strings. Program III shows this in action.

Here the FOR ... NEXT loop cycles seven times. Each time round the loop the MID\$

```

10 REM PROGRAM III
20 whole$="abcdefg"
30 FOR start=1 TO 7
40 PRINT MID$(whole$,sta
rt,1)
50 NEXT start

```

Program III

operates on *whole\$*, taking one character from it.

Which character is taken depends on the value of the loop control variable *start*. Try altering the program so that it takes two or three letters at a time.

```

10 REM PROGRAM IV
20 whole$="abcdefg"
30 FOR slice=1 TO 7
40 PRINT MID$(whole$,1,s
lice)
50 NEXT slice

```

Program IV

In contrast, Program IV uses MID\$ to take progressively larger numbers of letters from *whole\$*.

As the loop control variable *slice* increases in value, so more characters are taken from *whole\$*. However the slicing always starts from the first character. The result is:

```

a
ab
abc
abcd
abcde
abcdef
abcdefg

```

Now doesn't this remind you of something? Can you use the same program to produce such a triangle of asterisks? All you have to do is to change line 20 to:

```

20 whole$="*****"

```

and you have one. Use a decreasing STEP to produce a decreasing triangle.

But what of the reverse images of the above triangles?

```

10 REM PROGRAM V
20 asterisk$="*****"
30 length=LEN(asterisk$)
40 FOR loop=1 TO 8
50 line$=STRING$(length-
loop,CHR$(32))+MID$(asteri
sk$,1,loop)
60 PRINT line$
70 NEXT loop

```

Program V

Program V makes use of MID\$

Beginners

From Page 29

and STRINGS to produce one of them.

The heart of the program lies in line 50. This takes a number of spaces and a number of asterisks and joins them into one string *line\$*. This is then printed out by the next line.

Each time round the loop there is one less space and one more asterisk. The result is:

一
 二
 三
 四
 五
 六
 七
 八
 九
 十

Can you alter the program to produce:

● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●

Tearing ourselves away from triangles of asterisks, let's have a look at Program VI. If you find the output rushes

```

10 REM PROGRAM VI
20 whole$="abcdefg"
30 FOR start=1 TO 7
40 FOR slice=1 TO 7
50 PRINT MID$(whole$,start,slice)
60 NEXT slice
70 NEXT start

```

Program: V

past too quickly, use the Ctrl and Shift keys to hold things up.

This listing is a combination of Programs III and IV. Now the MIDS lies at the heart of a pair of nested FOR ... NEXT loops.

Notice that the control variables of these loops, *start* and *slice* are both used in the MDS.

As you can see from Program VI's output, MID\$ is

a very powerful function, especially when used with loops.

So let's see how we can use it to solve our original problem. Program VII, though a little inflexible, gives us what we

```

10 REM PROGRAM VII
20 DIM records$(3)
30 FOR loop=1 TO 3
40 READ records$(loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT MID$(records$(loop),6,3);" MID$(records$(loop),12,1)
80 NEXT loop
90 DATA " TOM CAT 3 7"
100 DATA " IAN RAT 2 1"
110 DATA " ERIC RAT 1 1"

```

Program VII

want, allowing us access to any of the fields in *record\$()*.

Line 70 is the one to understand. The first MIDS takes three characters, beginning at the sixth character in. This is the species field.

The second MiDS takes one character, starting at the twelfth position. This is the weight field.

When the final loop has finished, the program displays:

CAT	7
RAT	1
RAT	1

the species and weight fields we were unable to get at, or access, before. Changing line 70 to:

```
70 PRINT MID$(records$(loop),1,4); " *MID$(records$(loop),10,1)
```

gives us:

TOM	3
IAN	2
ERIC	1

the elusive name and age fields.

However while Program VII may show how MID\$ solves our previous problems, it's still a bit inflexible.

If I want to display a different combination of fields from a data string, a program line has to be changed.

Surely it would be better if the program had the Electron asking me which combination of fields I want to see? Program VIII does this.

I leave this to you to figure out as your "homework". Don't worry though, there's nothing in it that we haven't covered already.

It's just a bit longer than our normal examples, and so looks more formidable. However, if you take it step by step, you should have no problems.

And when you've done that, can you improve it? I'm not too

happy with the inputs. Could they be better mugtrapped?

And could our method of storing information in a data string be made more efficient? After all, we're wasting spaces in the name fields.

And what if our animals didn't all belong to convenient three letter species? What if it were Eric the aardvark or Tom the tarantula?

● We'll meet the answers to some of these questions next time as we look inside strings with *INSTR*.



```

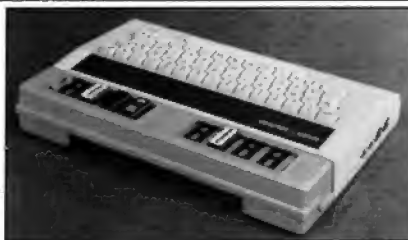
10 REM PROGRAM VIII
20 REM *****
30 DIM records$(3)
40 FOR loop=1 TO 3
50 READ record$(loop)
60 NEXT loop
70 REM *****
80 INPUT "Do you want name? Y/N " test$
90 IF test$="Y" OR test$="y" THEN name=TRUE ELSE name=FALSE
100 INPUT "Do you want species? Y/N " test$
110 IF test$="Y" OR test$="y" THEN species=TRUE ELSE species=FALSE
120 INPUT "Do you want age? Y/N " test$
130 IF test$="Y" OR test$="y" THEN age=TRUE ELSE age=FALSE
140 INPUT "Do you want weight? Y/N " test$
150 IF test$="Y" OR test$="y" THEN weight=TRUE ELSE weight=FALSE
160 PRINT
170 REM *****
180 FOR loop=1 TO 3
190 IF name THEN PRINT MID$(record$(loop),1,4) " ";
200 IF species THEN PRINT MID$(record$(loop),6,3) " ";
210 IF age THEN PRINT MID$(record$(loop),10,1) " ";
220 IF weight THEN PRINT MID$(record$(loop),12,1) " ";
230 PRINT:PRINT
240 NEXT loop
250 REM *****
260 DATA " TOM CAT 3 1"
270 DATA " IAN RAT 2 1"
280 DATA "ERIC BAT 1 1"

```

Program VIII



SLOGGER



ROMBOX

Want to make serious use of your Electron? ... Then fit the ROMBOX and you will have access to a wide range of ROM based software including many BBC ROMs).

- ★ Superb value for money.
- ★ Runs all good (non mode 7) BBC ROM software.
- ★ Fully compatible with Plus 1 and Plus 3.
- ★ Up to 8 ROMs instantly selectable.
- ★ Supports 8K and 16K sideways RAM.
- ★ Allows further expansion at rear.

ONLY £44.95

STARWORD (16K ROM)

A Professional word Processor for UNDER £35
★ Does everything VIEW does plus MUCH MORE!
Designed for the home user, education or small business needs, STARWORD enables even those with limited typing skills to produce and print letters, manuals or reports using the Electron.
★ Easy to use.

ONLY £34.50

STARSTORE (ON ROM)

Store and retrieve your names and addresses or any other information with the STARSTORE DATABASE, written specially for the Electron, STARSTORE works with STARWORD for personalising standard letters (mailmerging).

ONLY £29.95

PRINTER DRIVER FOR STARWORD

Use most printers with STARWORD

Cassette £7.95 ROM £9.95

SLOGGER BUSINESS PACKAGES

ROMBOX-P + STARWORD + STARSTORE + FREE PRINTER ROM.

ONLY £120.00 BP1

ROMBOX + STARWORD + STARSTORE

ONLY £105.00 BP2

Also available:

Vine Micro's ADDCOMM £28.00
Plus 1 ROM upgrade £7.95

AND NOW... ROMBOX-P

Offers all the features of ROMBOX Plus built-in centronics printer interface and FREE Printer ROM (worth over £20).

- ★ Up to 8 ROMs instantly selectable.
- ★ Selectable 8/16K Print buffer to increase throughput.
- ★ Ideal as a word-processing station with Plus 3 fitted.
- ★ FREE Printer ROM included.
- ★ Superb value for money at **ONLY £69.95**

STARMON

- ★ Display of memory in: ASCII and binary, decimal, octal or hexadecimal.
- ★ Full support of sideways ROMs.
- ★ Comprehensive debugging facilities, including breakpoints, traces and events.
- ★ "a very professional piece of firmware" ... Acorn User.

ONLY £22.50

ELKMAN

The most powerful ROM manager on the BBC is now available for the Electron.

ONLY £17.50

PRINTER ROM

Allows use of sideways RAM as 8K or 16K print buffer and offers a host of useful utilities for EPSON printers. Ideal for all your printing requirements.

- ★ Electron/BBC compatible.

ONLY £24.95

STARGRAPH

Graphics Rom giving screen dump to EPSON printer, printing of text at any angle or any size, circle, ellipse polygons, arc, dotted lines, colour fitting plus more.

ONLY £21.95

T2P3

Transfer the majority of cassettes Tapes 2 Plus 3 disk system, for much faster loading.

ONLY £19.95

All prices include VAT P&P UK Mainland only

Cheques payable to:
SLOGGER LTD.

☐ Access No.

☐ Visa

Name

Address

Signed Tel. No.

Send Orders to: **SLOGGER LTD.**
107 RICHMOND ROAD, GILLINGHAM, KENT

PLEASE SEND ME:

Cost

1	_____	£	_____
2	_____	£	_____
3	_____	£	_____
4	_____	£	_____
5	_____	£	_____

Total £

**SEND
FOR
THEM
TODAY**

DEALER ENQUIRIES WELCOME. TEL: 0634 52303 (2 lines)

JOYSTICKS— THE COMPLETE SOLUTION



Delta 3B Twin



Delta 14B

Delta 14B/1



Delta 3S
and
Delta 3B
Single



Datapad 16B

DELTA 3B TWIN—BBC B or ELECTRON PLUS 1 £19.95

A direct but improved alternative for the original ACORN joysticks, with 2 joysticks wired to one plug. As with all our joysticks they have the fast action sprung to centre return of the steel shafted nylon covered joystick. The light action makes them ideal to hold and the 3 fire buttons allow left or right-handed use.

DELTA 3B SINGLE—BBC B or ELECTRON PLUS 1 £12.00

A single joystick that in some ways can act as two. The custom made special "low noise" potentiometers are wired so that it will work as a left hand or right hand joystick. It can even run some programs written for two joysticks and has the fire buttons of both.

DELTA 14B—BBC B £14.95

Our original ACORN/BBC handset. The same super light joystick, but the long life buttons, which have been video game tested for many years, increased to 14 in number. A DELTA 14B/1 is needed to run the keypad but a 14B on its own will work as a joystick and fire buttons, so you can always add the 14B/1 to it later.

DELTA 14B/1 for use with 1 or 2 DELTA 14Bs £14.85

DELTA DRIVER CASSETTE £5.95

The A/D/USER PORT interface box. This gives simultaneous access to both the analogue port, for the joystick part and the user port, for the keypad. Two handsets can be plugged into the box giving a total of 24 user definable keys.

Full instructions are provided to include the keypad in your own programs even in BASIC or for the non-programmer a DELTA DRIVER cassette is available with keyboard to joystick/keypad conversions and keypad set up programs.

DELTA 3S—ELECTRON with switch joystick interface £12.00

For an ELECTRON with a switched joystick interface (Not a PLUS 1) this gives you the same delightful light, fast action of the DELTA joysticks but fitted with a 9 way D plug as per Atari, Commodore, etc. and will run on First Byte interface or similar.

DELTA ASC not illustrated £9.95

This little box plugs in series with your analogue joystick to alter its characteristics simply by using a switch. In one set up the joystick will act like a switched joystick, i.e. a slight movement will act as if the joystick has been pushed hard over. In the other mode the joystick only covers the centre half of the A/D converter so that it takes twice as much movement to give the same effect. This makes it much easier to make delicate adjustments to programs like flight simulators.

DATAPAD 16B £39.95

A commercial spec. 16 way keypad. Full travel mechanical keys with double shot moulded keycaps mounted in a low profile metal case. The keys are marked with calculator legend, but the software included allows the pad to be defined as any keys, including function keys or single byte VDU commands such as PRINTER ON/OFF. No tampering with the computer as it fits onto the user port.



Available from your dealer
or direct from us



Voltmace Limited

Park Drive
Baldock
Herts
SG7 6EW
Telephone (0462) 894410

SPACE COUNT

By
**STEVE
LUCAS**

SPACE Count is a simple educational game aimed at five to seven year olds.

When the program is run a number of coloured objects will be displayed on the screen and the aim is to count them.

To make life a little more exciting the counting must be done before Cedric flies his plane across the bottom of the screen.

Each correct answer makes Cedric fly his plane faster, making the next question more difficult.

If very young children are playing you may want to remove this by deleting the end of line 1290.

Each wrong answer makes Cedric slow down for the next question.

Two attempts are given for each question and the child has three lives in each game.

The game was written for the Electron. If it is run on the BBC Micro Cedric will fly across the screen far too fast and you should make the changes suggested in line 130.



PROCEDURES

setup	Chooses random numbers and stores this in the array.
game	Main control loop.
highscore	Deals with end of game.
top	Defines top window.
middle	Defines middle window.
bottom	Defines bottom window.
tries	Allows you to answer the question.
get	Tests the keyboard input.
win	Correct answer.
close	Wrong answer.
error	Error handling.
move	Move plane.

MAIN VARIABLES

S%	Score.
lives%	Number of lives.
U%	Position of plane.
col%	Colour.
V%	Random number.
X%, Y%	General variables.
gra\$	Graphics.
A\$	Keyboard input.
B\$	String value of answer.
ans%	Correct answer.
col\$(X)	Words for the numbers.
val\$(x,y)	Array to hold positions for screen locations.
speed%	Speed of game.
try%	Attempt.
guess%	Answer selected.

Full listing starts
on Page 34

From Page 33

```
10 REM ** Space Count **
20 REM ** an educational
  program for 5-6 year olds
**
```

```
30 REM ** by Steve Lucas
**
```

```
35 REM (c) Electron User
40 ON ERROR MODE6:PROCer
  for
```

```
50 MODE6:VDU19,0,4,0,0,0
60 *FX210,0
```

```
70 PRINTAB(14,2)"Space
  Count"SPC2"by Steve W. Lu
  cas for Electron User"
```

```
80 REM ** sound on or of
  F **
```

```
90 PRINTAB(6,10)"Do you
  want sound (Y/N) ?"
```

```
100 REPEAT:AS=BET$;UNTIL
  INSTR("YyNn",A$):IFA$="N"OR
  A$="n"THEN*FX210,1
```

```
110 REM ** set variables
**
```

```
120 lives$=3:DIM col$(40)
  :val$(10,4):FOR X=0 TO 40:R
  EADcol$(X):NEXT X:speed$=30
  :UX=0:SZ=0
```

```
130 REM **change the valu
  e of speed$ to 100 in line
  120 on the BBC micro **
```

```
140 DATA zero,one,two,thr
  ee,four,five,six,seven,eigh
  t,nine,ten,eleven,twelve,th
  irteen,fourteen,fifteen,six
  teen,seventeen,eighteen,nin
  e,ten,twenty
```

```
150 DATA twenty one,twent
  y two, twenty three, twenty
  four, twenty five, twenty si
  x, twenty seven, twenty eight
  , twenty nine
```

```
160 DATA thirty, thirty on
  e, thirty two, thirty three, t
  hirty four, thirty five, thir
  ty six, thirty seven, thirty
  eight, thirty nine, forty
```

```
170 REM ** define graphic
  s characters **
```

```
180 VDU23,224,0,120,143,2
  41,255,127,3,2
```

```
190 VDU23,225,0,0,0,0,232
  ,252,0,0
```

```
200 VDU23,226,1,3,3,15,
  25,56,56
```

```
210 VDU23,227,192,224,224
  ,224,248,284,14,174
```

```
220 VDU23,228,0,0,15,24,1
  27,255,24,24
```

```
230 VDU23,229,0,0,192,48,
  252,255,24,24
```

```
240 VDU23,230,1,1,1,1,255
  ,127,63,31
```

```
250 VDU23,231,128,224,0,0
  ,255,254,252,248
```

```
260 VDU23,232,0,0,224,240
  ,24,12,15,15
```

```
270 VDU23,234,0,0,0,0,0,0
  ,252,87
```

```
280 VDU23,235,15,15,12,24
  ,240,192,0,0
```

```
290 VDU23,236,87,252,0,0,0
  ,0,0,0,0
```

```
300 VDU23,237,1,3,2,3,7,
  6,7,6
```

```
310 VDU23,238,120,192,64
  ,192,224,96,224,96
```

```
320 VDU23,239,7,7,6,6,14
  ,12,24,24
```

```
330 VDU23,240,224,224,96
  ,96,112,48,24,24
```

```
340 plane$=CHR$224+CHR$22
  5:lives$=CHR$226+CHR$227:ca
  r$=CHR$228+CHR$229:boat$=CH
  R$230+CHR$231
```

```
350 ship$=CHR$232+CHR$23
  4+CHR$10+CHR$8+CHR$8+CHR$23
  5+CHR$236:ship2$=CHR$237+CH
  R$238+CHR$10+CHR$8+CHR$8+CH
  R$239+CHR$240
```

```
360 REM ** define envelop
  es **
```

```
370 ENVELOPE 1,1,1,0,0,20
  0,0,0,126,0,0,-126,126,126
```

```
380 ENVELOPE 2,1,-7,7,0,1
  0,10,0,126,0,0,-126,126,126
```

```
390 ENVELOPE 3,4,90,-15,-
  15,18,20,28,126,0,0,-126,12
  6,126
```

```
400 REM ** instructions *
  *
```

```
410 MODE1:COLOUR 233:CLS:
  FOR X=5 TO 35 STEP 4:PRINT
```

```
AB(X,4):cars:PRINTTAB(X,28)
  :cars:NEXT VDU28,10,20,30,1
```

```
0:COLOUR 200:CLS
  420 PRINTSPCS;"Space Cou
  nt"SPCS:STRING$(12,""):VD
```

```
U23,1,0,0,0,0:
  430 COLOUR 2:PRINT" You a
  ust count the coloured ob
```

```
jects before Cedric get
  s"SPC9;"home."
```

```
440 COLOUR 3:PRINT" You ha
  ve only 3 lives":COLOUR1:P
```

```
RINT"Press the <Space Bar>
  ":*FX15,0
```

```
450 REPEAT UNTIL GET=32:M
  ODE1:PROCtop
```

```
460 REPEAT
  470 PROCsetup
```

```
480 PROCgame:UX=0
  490 UNTIL lives<1
```

```
500 PROChighscore
  510 RUN
```

```
520 END
  530 REM ** define array c
```

```
ontaining answers **
  540 DEFPROCsetup
```

```
550 VZ=RD(4):IFVZ=1THENS
  hip$="cars":gras$=car$ELSEIF
```

```
VZ=2THENship$="boats":gras$=
  boat$ELSEIFVZ=3THENship$="r
```

```
ockets":gras$=ship$ELSEship
  $="spaceships":gras$=ship2$
```

```
560 ans$=0:FORXZ=1TO10:FO
  RY1=1TO4:val$(XZ,YZ)=0:NEXT
```

```
YZ,XZ
  570 E1=0:REPEAT:FORXZ=1TO
  10:FORYZ=1TO4:CX=RD(5):IFC
```

```
XZ=1THENval$(XZ,YZ)=1:E1=1:a
  ns$=ans$+1
```

```
580 NEXTYZ,XZ:UNTILE1=1:c
  ol$=RD(5):IFcol$=1THENCX=4
```

```
col$="blue"ELSEIFcol$=2THE
  NCX=1:col$="red"ELSEIFcol$=
```

```
3THENCX=3:col$="yellow"ELSE
  IFcol$=4THENCX=2:col$="gree
```

```
n"ELSECX=5:col$="purple"
  590 PROCmiddle:CLS:VDU19,
```

```
2,CX,0,0,0
  600 FORXZ=1TO10:FORYZ=1TO
  4:IFval$(XZ,YZ)=1THENPRINT
```

```
AB(XZ+3,YZ+4):gras
  610 NEXTYZ,XZ
```

```
620 PROCbottom:CLS:PRINT
  AB(2):"How many :col$:SPC1
```

```
:ship$," are there ?":
  630 ENDPROC
```

```
640 DEFPROCtop
  650 VDU28,0,7,39,0:COLOUR
```

```
131:COLOUR 0
  660 ENDPROC
```

```
670 DEFPROCmiddle
  680 VDU28,0,28,39,0:COLOU
```

```
R128:CLS:COLOUR 2:ENDPROC
  690 DEFPROCbottom
```

```
700 VDU28,0,31,39,29:COLD
  UR131:COLOUR 1:ENDPROC
```

```
710 DEFPROCgame
  720 PROCtop:CLS
```

```
730 VDU23,1,0,0,0,0:
  740 PROCtries
```

```
750 COLOUR 1:PRINTAB(13,
  3):"Your answer ="
```

```
760 B$="":TX=1
  770 PROCget
```

```
780 ENDPROC
```



```

790 DEFPROCget
800 trv:=0
810 REPEAT
820 REPEAT
830 AS=INKEY$(0)
840 T1=T1+1:IF T1>speed%
THEN SOUND 1,2,0,5:PROCmove
:PROCTop
850 IF AS<>CHR$(13) AND (
AS<"0" OR AS<"9") THEN AS=""
"
860 IF UX>35 THEN trv:=3:
BS=BS+" "
870 BS=BS+AS
880 COLOUR 0:PRINTTAB(27,
5):BS
890 UNTIL AS=CHR$(13) OR
LEN(BS)>1
900 guess$=VAL(BS)
910 IFguess$=ans% THEN tr
v%:=9
920 trv:=trv+1:PROCTop:C
LS:PRINTTAB(14):IFUX>34THE
NPRINT*:GOTO940
930 IFtrv%>10THENGOTO990E
LSEPRINT*That was wrong.*
940 IF trv%<4 THEN COLOUR
1:PRINT"SPC3:" Press the
(Space Bar) to continue.*
950 *FX15,0
960 IF trv%<4 THEN REPEAT
UNTILGET=32
970 AS="":BS=""
980 IF trv%<2 PROCtries
990 UNTIL trv%>1
1000 IFtrv%>10THENPROCwin:
ENDPROC
1010 lives%=lives%-1:PROC
lose:ENDPROC
1020 END
1030 DEFPROCmove
1040 PROCbottom:PRINTTAB(U
X,2):*":UX=UX+1:PRINTTAB
(UX,2):plane$:=T1:=0
1050 DEFPROC
1060 DEFPROCtries
1070 PROCtop:CLS:PRINTTAB(
11,2):*Lives Left *;STRING
$(lives%,lives%)
1080 COLOUR 1:PRINTTAB(13,
5):*Your answer =*
1090 ENDPROC

```

```

1100 DEFPROCclose
1110 speed:=speed%+10:REM
** slow game down for wrong
answer **
1115 *FX15,0
1120 PROCtop:CLS:COLOUR 0:
IFUX>34 THEN PRINT TAB(10)
: *You were too slow!*
1125 SOUND 1,3,-15,15
1130 COLOUR 1:PRINT"TAB(0)
: *There were ":PRINTTAB(8)c
ol$(ans%):SPC1:ship%: """:
COLOUR 0:PRINT" Press the
(Space Bar) to continue.*
1135 REPEAT UNTIL GET=32
1140 ENDPROC
1170 DEFPROChighscore
1180 PROCtop:CLS:COLOUR1:P
RINTTAB(8,2):*You have scor
ed :%;
1190 COLOUR 0:PRINT"" Pr
ess the (Space Bar) for ano
ther game.*
1200 *FX15,0
1210 REPEAT UNTIL GET=32
1220 ENDPROC
1230 DEFPROCwin
1240 SZ=SZ+1:FX15,0
1250 PROCtop:CLS:COLOUR 1:
PRINT"TAB(8):Well done.*"
TAB(8):*There were ":col$(a
ns%):SPC1:ship%: """:COLO
R0:PRINT" Press the (Space
Bar) to continue.*
1260 SOUND 1,3,100,10
1270 *FX15,0
1280 REPEATUNTILGET=32
1290 ans%:=0:speed%:=speed%-
5:REM ** speed game up if a
nswer correct **
1300 ENDPROC
1310 DEFPROCerror
1320 CLS:PRINT ""*:REPORT:
PRINT" at line ";ERL
1330 END

```

This listing is included in this month's cassette tape offer. See order form on Page 61.

ANDYK Ltd.

FAST ELECTRON BOARD

Increases speed. Comparable in all Electron modes with BBC model B. All Electrons easily modified with switched change-over. Can now run BBC software where speed was limiting factor. Full instructions included: **£29.99 + P&P**

EPROM CARD

Can take application software. Allows use of utility ROMs. Plugs into Plus 1: **£9.99 + P & P**

29 STATION ROAD, WESHAM,
LANCASHIRE PR4 3AA.
TEL: (0772) 684573

BBC/ELECTRON PROFESSIONAL SOFTWARE

Our educational software is used in thousands of schools and homes throughout Great Britain.

EDUCATIONAL 1

BBC/ELECTRON

Table £6.95 Disc £8.95

Hours of fun and learning for children aged five to nine years. Animated graphics will encourage children to enjoy counting, maths, spelling and telling the time. The tape includes six programs: MATH 1, MATH 2, CUBECOUNT, SHAPES, SPELL and CLOCK.

An excellent mixture of games. Personal Software - Autumn 1983.

EDUCATIONAL 2

BBC/ELECTRON

Table £6.95 Disc £8.95

Although similar to Educational 1, this tape is more advanced and aimed at seven to twelve year olds. The tape includes MATH 1, MATH 2, AREA, MEMORY, CUBECOUNT and SPELL.

FUN WITH NUMBERS

BBC/ELECTRON

Table £6.95 Disc £8.95

These programs will teach and test basic counting, addition and subtraction skills for four to seven year olds. The tape includes COUNTING, ADDING, SUBTRACTION and an arcade type game called ROCKET MATHS which will exercise addition and subtraction. With sound and visual effects.

These are excellent programs which teachers on the project have no hesitation in recommending to other teachers. Computers in Classroom Project.

FUN WITH WORDS

BBC/ELECTRON

Table £6.95 Disc £8.95

Start your fun with alphabet puzzle, continue your play with VOWELS, learn the difference between THERE and THEIR, have games with SUFFIXES and reward yourself with a game of HANGMAN.

Very good indeed... A&B Computing - Jan/Feb 1984

JIGSAW AND SLIDING PUZZLES

BBC/ELECTRON

Table £6.95 Disc £8.95

There are two jigsaw and four sliding puzzles on a 3" x 3 and 4" x 4 grid. Each program starts off at an easy level to ensure initial success but gradually becomes harder. It helps children to develop spatial imagination and in solving problems. The tape includes: OBLONG, JIGSAW, HOUSE, NUMBERS, CLOWN and LETTERS.

SPECIAL OFFER

Buy three titles and deduct £3.00
Add 50p p&p per order. Please state BBC or ELECTRON or
40 or 80 track for discs.

Golem Ltd. Dept E, 77 Qualitas, Bracknell, Berks RG12 4QG. Tel: 0344 50720

Never before has there been
offer to readers of a



EXPAND your Electron

... for much less than the

How the Plus 1 helps you make the most of your Electron

With the Plus 1, you and your Electron enter a whole new computing dimension. The Plus 1 turns your Electron into a fully fledged micro capable of using printers, joysticks and cartridge ROMs - the software that comes on a chip. In addition, the Plus 1's analogue to digital port gives access to the outside world - while the slots for the ROM cartridges allow the Electron to take advantage of the latest, most exciting hardware developments yet to be released.

If you want to use your Electron to the full, then it's essential you get a Plus 1.

EXPAND - with the Electron Workstation

Now you can transform your Electron into a serious micro Workstation. This package consists of a Plus 1 and the wordprocessor and Viewsheet spreadsheet, both on cartridge. Workstation makes the Electron a hard-working yet inexpensive machine for home and office. From business letters to your first novel, from cash flow crises, it can take them all in its stride.

Normal price £119.80

Electron Use

EXPAND - with the Electron Database

Bring the speed of discs and the organised memory of a personal computer to your Electron with the Electron Data Manager. It combines a powerful interface and Acorn's official disc-based Database - a disc that can keep track of things quickly, reliably and efficiently. Sophisticated as it is fast, the Data Manager is a must for all serious Electron users.

Normal price £248.95

Electron Use

All prices include
VAT and carriage.

Please use the order form

...een such a money-saving
computer magazine!

AND Electron



...price you'd normally pay!

Normal price

£59.90

Special price

for readers of

Electron User

39.95

incl. FREE game

ROM cartridge

Workstation!

...ro with the Electron
...he acclaimed View
...tridge ROMs. The
...ensive tool for home
...home economics to

...er price £69.95

Data Manager!

...powerful database to
...sists of the Plus 3
...ic that allows you to
...licated, accurate and
...applications.

...r price £149.95

on Page 61



You're never too young to play a Magical Adventure on the BBC Micro or Electron!



Based on the style of the classic computer adventures – but written so that even small children can learn to find their way around, encouraged by colourful graphics and exciting sound effects.

The pack contains a 48-page full colour storybook

PLUS

a full length multi-location adventure on cassette for only

£8.95! post free

Read the book
– then play
the game!



**Makes
an ideal
present**

Please send me the complete Magic Sword pack containing storybook and cassette to:

Name _____

Address _____

- ☐ I enclose my cheque for £8.95 payable to Database Publications
☐ Or debit my Access/Visa card:

No. _____

Signed _____

SEND TO: Adventure offer, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

Nightingale The Modem

The facts speak for themselves, **Nightingale** is without equal in its field. It is undoubtedly the most popular multi baud rate modem available today. Whatever your communication requirements, the simplicity of use and the versatility of **Nightingale** will enable you to provide a solution whether the need is to extract information from Prestel, send telex's via Telecom Gold, download telesoftware or exchange files, **Nightingale** will do the job and a whole lot more besides.

Nightingale operates at the two most popular baud rates 1200/75 as used by both private and public viewdata systems and 300/300 baud for communication with remote mainframe, mini or micro systems. Also available in 'reverse viewdata mode' 75/1200.

Nightingale has passed the very rigorous tests required by the BAPT and is fully approved for use in the UK. This not only means that you can rely upon the safety of the product because of the stringent manufacturing constraints, but also means that because it is a BAPT approved product, you can be assured that your application to Telecom Gold, Prestel etc., will not be refused.



APPROVED for use with telecommunication systems run by British Telecommunications in accordance with the conditions in the instructions for use. S/2002/3/16/00000

Tellstar The Software

A fitting partner for the Nightingale modem, Tellstar has been developed from the same stable, and to the same high specification as the best selling BBC communications software COMMSTAR. With its powerful combination of Viewdata and ASCII terminal capabilities contained in one Eprom, Tellstar is the first real communications software available for the Electron and probably the only communications software you will ever need. It will allow you to use to the full, the versatility of the Nightingale modem in accessing information from Prestel, sending/receiving files or sending telex's, downloading telesoftware, etc. Although it is unusually versatile, it is extremely easy to use. A comprehensive manual describes each of Tellstar's features in simple terms. Tellstar comes complete with an RS423 Interface developed to an Acorn specification and manufactured by Pace which is connected to your Electron via the Plus 1 Interface.

The Competition



Pace have linked with the premier computer information provider on Prestel, MICRONET and Virgin Atlantic Airlines, all pioneers in their own fields, to offer you a challenge. A chance to try out your skills using your modem and play the 'Pace Round Britain Quiz' on Micronet, and in so doing, an opportunity to win a fabulous holiday for two in New York. This competition will be open to you between November 1st and February 1st if you buy one of our modems before the end of January. In addition, you will be given, free of charge, a full quarters subscription to MICRONET worth £10, and free registration to Microlink on Telecom Gold.

The prize includes a return flight to New York, 6 nights accommodation in a high quality New York Hotel, and spending money to the total value of £400.

Full details are contained with each modem.

micronet
800

Virgin
atlantic

Combination of Nightingale Modem, Tellstar and RS423 Interface, special introductory offer £139 plus VAT



The products and information are available from good quality dealers throughout the country or direct from Pace. Payment accepted by cheque, Access or Visa.

Pace Micro Technology Ltd.,
Juniper View, Allerton Road, Bradford BD15 7AG.
Tel. 0274 488211 Telex 51564

Telecom Gold mailbox No. PCE 001 Prestel Mailbox No. 274729306



Make it a Merry Micro Christmas



WHY not send the Electron fans among your family and friends an Electronic Christmas card?

This program creates a lovely graphic display to the accompaniment of some festive tunes and gently falling snow. There's even a snowman and a Christmas tree decorated with colourful fairy lights.

Of course you'll want to personalise your card. Line 40 holds the key. Place your name in *fromS* and the recipient's in *toS*.

When the card has been drawn, pressing the Q key will switch the carols off. S will switch them back on.

PROCEDURES

- | | |
|-------------------|--|
| assemble | Assembles a short machine code routine to play the carols. |
| snow | Draws the snow. |
| chars | Defines the characters. |
| bell (E,F) | Prints a bell. |
| move | Moves the snow by redefining the colours. |

```

10 REM Christmas Card
20 REM D.W.Davies
30 REM (c) Electron User
40 to="ELECTRON USER":i
roms="D.W.Davies":REM Names
of sender or receiver must
not exceed 16 spaces
50 ON ERROR GOTO 2290
60 MODE1
70 VDU23,1.0;0;0;0
80 PROCIntro
90 PROCStoredata
100 PROCAssemble
110 PROCchars
120 MODE2
130 VDUS:GCOL0,134:CLG
140 PROCsnow
150 PROCcorners
160 RESTORE2210:FOR NX=1
TO 4:READ EX,FZ:PROCScantaE
%,FZ-4):NEXT
170 PROCbell1s(E,F)
180 PROCsa
190 PROCsanta(128,832):PR
OCsanta(1824,832)
200 PROCtree
210 PROCto:PROCch:PROCfro
220 PROCmove
230 END
240 DEFPROCchars
250 VDU23,224,3,7,15,31,3
1,31,0,0
260 VDU23,225,224,240,252
,224,240,248,0,0
270 VDU23,226,0,4,4,1,1,0
,0,3
280 VDU23,227,0,32,32,128
,128,0,0,192
290 VDU23,228,0,0,0,0,0,0
,63,63
300 VDU23,229,0,2,2,0,0,0
,252,252
310 VDU23,230,16,16,16,16
,24,25,31,28
320 VDU23,231,8,0,0,8,24,
152,248,56
330 VDU23,232,31,31,31,15
,115,7,7,3
340 VDU23,233,240,248,248
,240,248,224,224,192
350 VDU23,234,15,43,43,46
,6,6,0,3
360 VDU23,235,240,212,212
,116,96,96,0,192
370 VDU23,236,2,7,7,2,0,0
,0,0
380 VDU23,237,240,240,240
,240,240,240,240,240
390 VDU23,239,1,2,4,4,4,8
,0,8
400 VDU23,239,128,64,32,3
,2,32,16,16,16
410 VDU23,240,16,16,31,32
,64,127,2,1
420 VDU23,241,8,8,248,4,2
,254,64,128
430 VDU23,242,0,1,3,3,3,7
,7,7
440 VDU23,243,0,128,192,1
,92,192,224,224,224
450 VDU23,244,15,15,0,31,
63,0,1,0
460 VDU23,245,240,240,0,2
,48,252,0,128,0
470 VDU23,247,66,102,60,2
,4,0,0,0,0
480 VDU23,248,126,60,60,6
,0,60,60,189,126
490 VDU23,249,64,64,224,6
,64,0,0,0,0
500 bellone$=CHR$238+CHR$
239+CHR$8+CHR$8+CHR$10+CHR$
240+CHR$241
510 belltwo$=CHR$242+CHR$
243+CHR$8+CHR$8+CHR$10+CHR$
244+CHR$245
520 red$=CHR$224+CHR$225+
CHR$8+CHR$8+CHR$10+CHR$226+
CHR$227
530 white$=CHR$228+CHR$22
9+CHR$8+CHR$8+CHR$10+CHR$23
0+CHR$231+CHR$8+CHR$8+CHR$1
0+CHR$232+CHR$233
540 yell$=CHR$18+CHR$234+C
HR$235
550 ENDPROC
560 DEFPROCintro
570 COLOUR1:PRINTTAB(13,7)
)"CHRISTMAS CARD":TAB(13,9)
"By D.W.Davies"
580 COLOUR2:PRINTTAB(16,15)
)"When Card has been drawn:
-"
590 COLOUR3:PRINTTAB(16,18)
)"Pressing '0' will end Car
ols":TAB(6,20)"Pressing 'S'
will start them again"
600 COLOUR1:PRINTTAB(12,12)
5)"Press 'SPACE BAR'"
610 REPEAT UNTIL GET=32
620 ENDPROC
630 DEFPROCtri(OX,PX,size
X)
640 VDU25,4,OX:PX:25,0,si
zeX:-sizeX/2:25,0,-sizeX/2:
0:25,0,1:sizeX:sizeX
650 ENDPROC
660 DEFPROCtree:VDU18,0,2
:25,4,630:75:25,4,650:75:25
,85,630:0:25,85,650:0:18,0,
1:25,4,608:28:248:18,0,2:
670 OX=640:PX=150
680 FOR sizeX=150 TO 50 S
TEP -25
690 PROCtri(OX,PX,sizeX)
700 PX=PX+40:NEXT
710 FOR IX=1 TO 40
720 GCOL0,RND(2)+3
730 OX=RND(380)+490:RX=RN
D(260)+75:IF POINT(OX,RX)(<)
2 GOTO 730
740 VDU25,4,OX-RX:RX+6:249
:
750 NEXT
760 ENDPROC
770 DEFPROCsnow
780 FOR IX=0 TO 1279 STEP
50
790 colX=RND(8)+7:downX=
20
800 PLOT4,YX,RND(32)+1012
810 FOR NX=0 TO 51
820 IF colX>15 colX=8:down
X=-(RND(15)+15)
830 VDU18,0,colX,25,0,-(R
ND(15)+5):downX:236,8
840 colX=colX+1:NEXT NX
850 NEXT IX
860 FOR CX=0 TO 15
870 VDU19,CX,6,0,0,0
880 NEXT
890 ENDPROC
900 DEFPROCmove
910 YG1=12
920 REPEAT
930 FOR NX=1 TO 15
940 FOR CX=0 TO 15
950 C3Z=C2X-1:IF C2X=8 C3
X=15
960 VDU19,CXZ,7,0,0,0,19,
C3Z,6,0,0,0
970 changeZ=RND(2)+3
980 VDU19,changeZ,RND(7),
0,0,0
990 soundZ=INKEY(15)
1000 IF soundZ=81 THEN *FX
13,4
1810 IF soundZ=83 THEN *FX
14,4
1820 IF YG1>60 YG1=12
1830 VDU18,0,7,25,4,RND(98
0)+96:YG1:236
1840 NEXT
1850 NEXT
1860 YG1=YG1+16
1870 UNTIL FALSE
1880 ENDPROC
1890 DEFPROCscanta(IX,YX)
1100 VDU18,0,1:25,4,IX:YX:
:PRINTred$
1110 VDU18,0,7:25,4,IX:YX:
:PRINTwhite$
1120 VDU18,0,3:25,4,IX:YX:
:PRINTyel$
1130 ENDPROC
1140 DEFPROCto:VDU18,0,0:2
5,4,575:944:PRINT"to":VDU2
5,4,324(28-LEN(to)):894:PR
INT to$
1150 ENDPROC
1160 DEFPROCch:rom
1170 VDU18,0,0:25,4,511:42
4:PRINT"From":VDU25,4,324(
28-LEN(from)):376:PRINT fr
om$
1180 ENDPROC
1190 DEFPROCchc
1200 AX=22:BY=26
1210 FOR JX=1 TO 2
1220 XZ=0:YZ=8:CX=7
1230 FOR IX=1 TO 2
1240 VDU18,0,CX:25,4,372-x
Z:544+YZ:237:25,4,800-x:59
2+YZ:237
1250 FOR YX=AZ TO BZ
1260 IF JX=1 THEN RX=1 ELS
E RX=3
1270 RESTORE(2080+(YZ+RX-1
6)+10)
1280 REPEAT
1290 READ YZ
1300 VDU18,0,CX:25,4,XX+32
-xZ:YZ:32+YZ:237
1310 UNTIL YZ=-1
1320 NEXT
1330 XZ=B+VX:YZ=C+Y
1340 NEXT
1350 AX=15:BX=19
1360 NEXT
1370 ENDPROC

```

Christmas Card listing

From Page 41

```

1300 DEFPROCbell(E,F)
1310 VDU10,0,1:25,4,E;F:P
RINTbellone$
1400 VDU10,0,3:25,4,E;F:P
RINTbelltwo$
1410 ENDPROC
1420 DEFPROCbellis(E,F)
1430 F=1023:FOR E=2 TO 16
STEP 2
1440 PROCbell(E*64,F):NEXT
1450 E=E+FOR VZ=1 TO 2
1460 FOR F=5.5 TO 13.5 STE
P2:PROCbell(E,F*32):NEXT
1470 F=F+22 TO 20 STEP2:
PROCbell(E,F*32):NEXT
1480 E=1151:NEXT
1490 ENDPROC
1500 DEFPROCcorners:GCOL0.
0
1510 RESTORE2210:FOR NX=1
TO 4:READX:LX:VDU25,4,KX:
LX:25,0,120;0:25,0,120;-120;-1
04:25,0,120;0:
1520 NEXT
1530 ENDPROC
1540 DEFPROCcirc(X,Y,X,Y)
1550 VDU25,4,X:RZ:Y:
1560 FOR theta=0 TO 360 ST
EP 30
1570 X=X+RZ*COS(RAD(theta))
1580 Y=Y+RZ*SIN(RAD(theta))
1590 VDU25,4,X:Y:25.85,X
Z=X:Y:Y:Z:
1600 NEXT
1610 ENDPROC
1620 DEFPROCcs:GCOL0,7:PRO
Ccirc(350,00,00):PROCcirc(3
50,200,40):PROCcirc(930,00,
00):PROCcirc(930,200,40)
1630 VDU10,0,0:RESTORE2220
:FOR JX=1 TO 10:IF JX%8 VDU
10,0,1
1640 READ X:READYZ:VDU25,
4,X:Y:236:NEXT:VDU10,0,0
1:PL0T69,325,210:PL0T69,375,
210:PL0T69,905,210:PL0T69,9
55,210
1650 VDU25,4,322:190:247:2
5,4,904:190:247:
1660 VDU10,0,0:25,4,323:26
0:240:25,4,900:260:240:
1670 ENDPROC
1680 DEFPROCstoredata
1690 RESTORE 2250
1700 ?%70=244:FOR IX=244 T

```



```

0 1 STEP-1:READ JZ:IX:Y%00=
JZ:NEXT
1710 ENDPROC
1720 DEF PROCAssemble
1730 pointer=0:70:sound=0:1
:sound=1:sound!2=-15:oswor
d=0:FF1:osbyte=0:FF4
1740 ?%220=000:74221=009
1750 FOR pass=0 TO 2 STEP
2
1760 PZ=0:900
1770 E OPT pass
1780 PHP:PHA
1790 TIA:PHA
1800 TYA:PHA
1810 LDA #000
1820 LDY #0FA
1830 LDY #0FF
1840 JSR osbyte
1850 CPX #10
1860 BMI end
1870 LDY pointer
1880 LDA #000,Y
1890 STA sound+4
1900 DEY
1910 LDA #000,Y
1920 STA sound+6
1930 LDA 07
1940 LDY #sound MOD256
1950 LDY #sound DIV256
1960 JSR osword

```

```

1970 DEC pointer
1980 DEC pointer
1990 BNE end
2000 LDA #244:STA pointer
2010 end
2020 PLA:TAY
2030 PLA:TAX
2040 PLA:PLP
2050 RTS
2060 )
2070 NEXT
2080 #FX14,4
2090 ENDPROC
2100 DATA 2,3,4,6,8,10,12,
14,16,17,18,21,24,26,28,30,
32,33,34,37,-1
2110 DATA 2,3,4,6,8,10,12,
14,16,17,18,21,24,26,28,30,
32,33,34,37,-1
2120 DATA 2,6,8,10,12,14,1
8,21,24,26,28,30,34,-1
2130 DATA 2,6,7,8,10,11,14
,16,17,18,21,24,26,28,29,30
,32,33,34,37,-1
2140 DATA 2,6,8,10,12,14,1
6,21,24,26,28,30,32,37,-1
2150 DATA 2,3,4,6,8,10,11,
12,14,16,17,18,20,21,22,24,
26,28,29,30,32,33,34,37,-1
2160 DATA 10,12,14,16,18,2
2,27,-1

```

```

2170 DATA 10,12,14,16,18,2
2,27,-1
2180 DATA 10,11,12,14,15,1
6,19,19,20,22,23,24,26,27,2
8,-1
2190 DATA 10,12,14,16,18,2
0,22,24,26,28,-1
2200 DATA 10,12,14,15,16,1
8,19,20,22,23,24,26,28,-1
2210 DATA 0,1023,1151,1023
,0,103,1151,103
2220 DATA 300,40,300,70,30
0,100,300,130
2230 DATA 800,40,800,70,80
0,100,800,130
2240 DATA 300,205,800,205
2250 DATA 80,15,80,5,80,
10,60,30,80,15,80,5,80,
10,60,30,100,30,96,30,1
00,30,80,30,80,30,100,15
,96,5,80,10,80,15,80,5,
80,10,60,30
2260 DATA 96,10,80,9,80,
10,60,9,76,9,80,9,76,9,
60,27,96,10,80,9,80,10,
60,9,76,9,80,9,76,9,60
,27,90,10,0,80,9,80,1
0,0,0,80,9,96,10,0,0,9
6,9,100,9,100,9,96,9,80
,9,96,9,80,9,80,10,76,9
,60,40
2270 DATA 96,5,0,0,96,5,
0,0,96,10,0,0,96,5,0,0
,96,5,0,0,96,5,0,0,96
,5,100,5,0,0,100,5,0,0,
100,7,0,0,100,5,96,5,0,
0,96,5,0,0,96,5,0,0,96
,3,100,5,0,0,100,5,100,
5,80,5,80,40
2280 DATA 52,10,72,10,0,
0,72,10,80,5,80,5,72,10
,0,0,72,10,80,5,92,5,1
00,10,0,0,100,10,100,10,
92,20,80,5,80,5,92,10,
0,0,92,10,100,10,80,10,
0,0,80,10,72,5,80,5,80,
10,60,10,60,10,72,40
2290 MODE6
2300 REPORT:PRINT" at line
":EOL

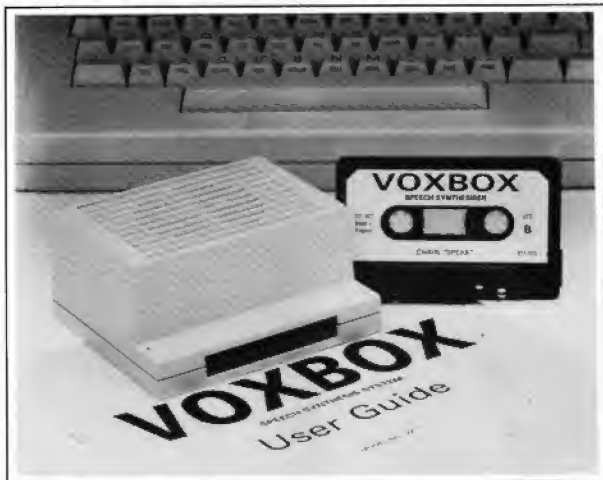
```

This listing is included in this month's cassette tape offer. See order form on Page 61.

VOXBOX SPEECH SYNTHESISER

A SUPERB ADDITION TO YOUR ELECTRON

Order now for prompt delivery — just £29.95 inc. p&p



CONTENTS: VOXBOX speech synthesiser, 2 programs on cassette, instruction booklet.
FULLY GUARANTEED

- **UNLIMITED VOCABULARY** is achieved by allophone based word construction.
- **NO OTHER INTERFACE REQUIRED** AS VOXBOX contains all the necessary interface circuitry to enable direct connection to the Electron's expansion connector. No external power source is required.
- **SOFTWARE** supplied on cassette makes VOXBOX extremely simple to use. SIDE A contains a dedicated word creation program which has many sophisticated facilities to help you quickly compose your own words and sentences. For your own programs SIDE B written entirely in machine code extends your existing BASIC with four new commands, SPEAK, LIB, LAST and SSAVE.
- **COMPREHENSIVE INSTRUCTIONS** include a simple explanation of allophone based word composition with many example words to help you start your composing quickly. Plus full documentation of the many facilities provided by the software.
- **GOOD SOUND REPRODUCTION** and sound input level is achieved through VOXBOX's own audio amplifier and 2½ inch loudspeaker. The sound output level is adjustable.
- **STYLISH CASING**, smartly finished and coloured acorn to match the Electron. The custom-made enclosure, neat and compact, measuring only 4½ x 3 x 2 inches, is designed for both strength and ease of connection to the Electron. Gold plate contacts ensure good connection is made.

LOW COST PLUS-1 ROM SLOT ADAPTOR for use with VOXBOX available soon.

MILLSGRADE LIMITED

3 HALCYON COURT
ST MARGARETS WAY
STUKELY MEADOWS
HUNTINGDON
CAMBS. PE18 6ES

**0480-413298
DEALER
ENQUIRIES
WELCOME**

I enclose cheque/P.O. to the value of (payable to Millsgrade Ltd.)

Name

Address

THIS month sees the second of our adventure top tens. As you can see, *Wheel of Fortune* still retains the number one spot, a result that I completely agree with as in my opinion it is the best adventure available for the Electron.

Classic Adventure, *Sphinx Adventure* and *Twin Kingdom Valley* are still doing well, though the other three Epic games have slipped quite a lot.

Pettigrews Diary has made a welcome appearance, as have *Philosophers Quest* and *Eye of Zoltan*.

Potter Programs have two games in at equal tenth and their other adventure, *Super-spy Flint*, was actually the next highest marked.

Surprisingly (to me), two adventures that I have not yet seen, *Galadriel in Distress* and *Strange Odyssey*, are in there too.

Keep your marks coming in for the next Top 10 in a few months time.

I've bowed to the vast weight of correspondence asking me to do a Sphinx special. Next time I shall be telling you what does what and to whom.

Incidentally, I still haven't managed to get all the way through it without that blasted dwarf getting me. Does anyone please know a way of saving a game?

M. Carter has asked me to mention that he has written in as his friend doesn't believe him and Suzanne has asked me to say hello to Sam P. and Sam W. Hello! And that's the last time I'll do that.

Sacha El-Mokaden (hope I got that right Sacha), has written in with a few questions. As far as I know, Acornsoft don't have any new adventures scheduled for release.

I don't know if the *Fourth Protocol* is to be released for the Electron - though I hope it will be - and Level 9 have no plans to convert their adventures.

David Johnson, Richard, Ian, Andrew and Lee among others have been asking over the last few months how to put

in the fuel capsule in *Stranded*.

I must confess that I have been telling them to insert the capsule but I have had a reply telling me I was wrong!

I have had another look at it and the solution is to drop the capsule and then pull the lever.

P.G. Peters has followed some earlier advice of mine and shot the robot, but hasn't realised that the recoil has thrown him towards the ship and that he can now go into the airlock and use that lockpick.

Peter Laughton and Steven Bloud have some questions about *Sadim Castle*. How do you get the wheelbarrow through the underground, how do you get the knife and where do you dig with the pickaxe?

Ken Edgar can't get through the jammed heavy metal door at the end of the underground tunnel. Can anyone help with any of these problems?

Iain McLean has sent in some useful tips for *Countdown to Doom* and has also asked for some help.

- Does the three metre cube have anything to do with the small island?
- What is the purpose of the black hole?
- Can the magnetic generator be switched on and can

Adventure Top Ten

- 1 *Wheel of Fortune*
- 2 *Philosophers Quest*
- 3 *Classic Adventure*
- 4 *Eye of Zoltan*
- 5 *Sphinx Adventure*
- 6 *Strange Odyssey*
- 7 *Twin Kingdom Valley*
- 8 *Pettigrews Diary*
- 9 *Quest for the Holy Grail*
- 10 *Staff of Law/Galadriel in Distress*

Epic Software
Acornsoft
Melbourne House
Softek
Acornsoft
Adventure International
Bug-Byte
Shards Software
Epic Software
Potter Programs

That Wheel of Fortune is still spinning in the top spot

you enter the surface sewer after going south from the ruined city?

I haven't done so well here myself, so any help will be much appreciated.

Darren Woodward would like to know how to get the pagage off of *Cleopatra's Needle*. So would I. I would also like to know what a pagage is!

Andi Sinnott has asked for help with *The Count* but has not given me any idea what the problem is. Please write back Andi and tell me where you are stuck.

Kristina Hook Torton has asked some interesting questions about *Twin Kingdom Valley*.

You can enter the game by entering QUIT but once you have done this you can only load in a saved game or restart by loading in the game from scratch.

To save a position on tape you enter in "SAVE" and to reload a saved position you type "LOAD". The program does the rest.

Some versions of the game don't seem to accept these commands, in which case I'm afraid you can't save your position.

The reason you keep getting the message "locked" is

because you are trying to cheat.

Without getting too technical, the easiest way to explain it is to say that the program has been saved in such a way that it cannot now be LOADED or "LOADed in. It can only be CHAINED or "RUN.

Stuart Moore is having trouble with *Galadriel in Distress*. Can anyone tell him how to read the runes on the signs and open the chest in the fire goblins' room?

H. Reynolds can't talk to the ghosts, find the gun or burn the sagebrush charcoal in Ghost Town. Isn't charcoal the result of burning something? Anyway, can anyone help him?

Finally, before moving on to problems I can solve, thanks to Simon O'Callaghan I can reveal how to get the keys in *Greedy Dwarf*.

Light the torch one move north of the rats and throw it south. Easy when you know how.

Hints Department

Richard Hayward and Peter Laughton are both having problems getting into the caves in *Adventure*. Richard says he has tried OPEN

SESAME and it doesn't work. It does you know! And that should also answer Peter's question.

Colin Mayner wants some answers to his problems in *Eye of Zoltan*. SAY the PASSword to get into the castle.

Don't bother with the tiger yet, you need to get something from the castle to protect you.

That maze does contain something you want, but doesn't lead anywhere.

Scott, Tim, Celici and Craig have asked for help with *Castle Quest*.

The witch doesn't like water but since she is very agile I suggest you find an enclosed space and throw the bucket at her.

You can go two ways to the witch. One way you have already seen all the screens you are going to see, which assumes you have got past the troll.

The other way assumes you have got past the spider, but to see anything further you will have to go back and get past that troll!

A lot of the screens you think you can see are just window dressing.

Matthew Bowen and Andrew Davies have two questions about *Twin Kingdom Valley*—how to get the jug of gold and how to kill the dragon?

Try filling the jug and use a staff.

M. Ryan has written in to ask whether there is anything in the maze in *Classic Adventure*. Yes and no.

There are two mazes, one contains the vending machine and need not be entered, while the other contains some treasure.

Nicholas Ryba has got the chain in *Classic* but doesn't know what to do next. Take the bear back the way you came.

Carl Barlow—thanks for the tips on *Strange Odyssey* by the way—wants to know how to open the keybox in the *Stolen Lamp*.

Use the grenade to open the box, but do it in such a way as to kill two birds with one stone.

Jason Drew wants to know how to kill the guard and the vizier. Think of the guard as a

bird. You can't kill the vizier.

Andrew Clark and Amanda Kemp want to know how to get across the glacier in *Sphinx Adventure*. As long as you have got the ring you can use the wand.

Andi Sinnott, Jonathan Lee, Andrew A. S. Kelly, Nicholas Ryba and Jamie Rees are also having problems with *Sphinx*. Try magic in the spell chamber, though rubbing the ring should be left till last.

The bear will follow you and chase off the orc. Use the cheese past the goblins to catch the mouse—you should feed it.

The mouse is in the dungeons of the vampire's castle. Use your bare hands to kill the dragon.

The only thing you can't do with the bear following you is cross a certain bridge.

Diabox will help you get back anything the troll takes, even though he keeps it safe

bone.

Chris, James Quinn and H. Reynolds also have some problems with this adventure. Wave something to get down the cliff. I think the burnt scroll is a red herring.

I don't think you can get back through the gate. Drop a sausage and map carefully to get back out of the maze. Kill the spider with the sword.

Yes, there is something north of the cave of echoes—use the amulet to find out what is there.

Simon O'Callaghan and Iain McLean want some help with *Countdown to Doom*. The spacesuit is UP and NORTH of the landing area and if you save that blob from falling into the swamp you be rewarded with a trip back in time.

Christian Howells and Eric Clarke are stuck in *Wheel of Fortune*. Tell the former about the bull and he will go off to get it. Shoot the

and feed the oyster.

Peter Laughton and Ken Edgar would like some help with *Sadim Castle*. Use the stake to raise the portcullis. Give the wheelbarrow to the gardener after killing the cheetah with the knife.

Jason McCauley is well and truly stuck in *Gisbournes Castle*. The flint is used to fire the cannon. The dynamite is a red herring.

You need the rope and the key to get into the dungeons. Kill Gisbourne and get a key off him to get into the chapel. Oil the rusty lock to get through.

Geoff Lumley has written in with a lot of questions about *The Count*. I haven't received a review copy of this yet but his letter raised such a lot of questions that I went out and bought it.

His first question concerns the capital As that keep cropping up in the text. These are not clues but mistakes!

He goes on to ask if ADEWNTURE and TAKE INDRY mean anything. No, they are also spelling mistakes.

The program also responds with a YOU CAN'T DO THAT YET when you try to fly. Ignore this, you can't fly.

The dedication to Alvin Files and using a mixture of upper and lower case in the opening description are also not clues of any kind.

You don't need to get into the coffin until you are ready to finish the game. The CENTURY OF DUST is a clue to the fact that the room isn't used and therefore a safe place to leave things.

The vents are red herrings. Yes, you can get back into the bedroom from the ledge if you use the right command.

The first night you will get bitten, but the bottle of blood will help on the second night.

The crowd are hostile because you haven't killed Dracula.

Last, but not least, Christopher Morgan can't get the coin in *Mystery Fun House*. A sticky problem this!

Chew the gum, stick it on the branch and then you can get the coin from the grating, but make sure that you keep the gum for later.

I'll leave that for you to chew over. See you next month.



for you. The Sphinx is in the desert.

To get past the pirate without losing anything you should map out the locations carefully. When you have found the way round him, use it.

Tony Sweetland and Jason Drew have some questions about *The Incredible Hulk*. You can't get in the chief examiner's office without being seen.

To pull the ring in the first room remember what Strange told you. To get the bio gem without the natter egg exploding try eating the egg.

To get past the ants you should make sure that the wax leaves them no offence to enter.

Patrick Moore (any relation?) wants to know how to get past the ferocious dog in *Greedy Dwarf*. Give it a

werewolf with the silver bullet.

Once you have got down the well you should explore everywhere and take everything to the canal bank. Then go into the fly's cave and out into the spider's cave.

You now need to go back up through the trapdoor (hint—it's boiled). I'll leave it to you to find out what objects to take with you and what to leave up by the canal.

Simon O'Callaghan and the King of the Valleys (sic) have asked for help with *Castle Frankenstein*. The hammer is in the castle kitchen—somewhere. The monster will help with the ring near the experiments room.

Pyramid of Doom is also causing problems for H. Reynolds and for C. Sullivan. Leave the purple worm alone, throw the ruby at the statue

Creating a crafty Plus 3 disc menu



LAST time we had a look at the ADFS directories. Now we are going to delve a bit deeper into the topic and develop an intelligent disc menu for Plus 3 owners.

If you remember, there can be several directories on a disc. To create a new directory you use *CDIR. The currently selected directory is called the CSD.

A directory consists of five contiguous sectors on the disc and is 1280 bytes long.

There's enough room for 47 entries and each entry is 26

bytes long. This is a total of 1222 bytes.

The rest of the space is taken up with its name, title, parent and sequence number.

The sequence number is the number after the name when you *CAT the disc. This is incremented every time you save a file.

Whenever a file is saved, its name, length, load and execution address is placed in the CSD.

It would be very useful if we had access to the directory information. We would then

know all there is to know about every file saved.

It's easier than you think to access the CSD. Just place a disc in the drive and type:

#MOUNT

This loads the root directory \$ into memory. If the \$ directory contains another called Games, then typing:

#DIR Games

will load the directory Games into memory. The CSD is the directory currently in memory, loaded to & 1200 and running

up to &16FF.

The first byte is the sequence number, followed by HUGO. It was Hugo Tyson that wrote the ADFS, so naturally he put his name in.

These four bytes are followed by the directory entries

Name and access	10 bytes
Load address	4 bytes
Execution address	4 bytes
Length	4 bytes
Start sector on disc	3 bytes
Sequence number	1 byte

Table 1: A directory entry

TWO WAYS TO ENSURE YOU GET

electron user

EVERY MONTH

1. Complete and mail subscription form on Page 61.
2. Hand this form to your newsagent.

Please reserve me a copy of Electron User magazine every month until further notice.

☐ I will collect

☐ I would like it delivered to my home.

Name

Address

Note to newsagent: Electron User should be obtainable from your local wholesaler, or contact Steve Fletcher, Circulation Manager on 0293 27053.

Vine Micros

HOW TO BE SECOND BEST...

We tried to write an exciting advertisement about the **ADDCOMM ROM**.

We wanted to tell you that **ADDCOMM** is...

"probably the best value for money out of the Toolkits", but "Acorn User" (Oct. '84) and "Micro User" (Oct. '84) told you first, followed by "Personal Computing Today" (April '85) and "The BBC ROM Book" by Bruce Smith.

We thought you should know that **ADDCOMM** is...

"Highly recommended for graphics programming", but "Using the BBC Micro" said that in their No. 1 issue.

We could have informed you that the...

"**ADDCOMM** chip vastly increases the power of the Micro from the programmers' point of view", but "Education Equipment" (Oct. '84) found out first.

We could sum up by simply announcing...

"**ADDCOMM** is brilliant".

but, guess what, "Electron User" (June '85) got in before us!

So, that just leaves us with the boring bits of what it costs:

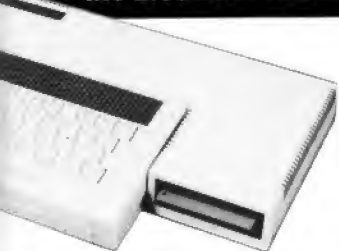
£28.00 including VAT and Post.

and where to get it.

Vine Micros
Marshborough, Nr. Sandwich,
Kent CT13 0PG.
(Or some Dealers)

If you only want to read about **ADDCOMM**, send us a stamp for the sixteen page brochure which also contains recent reviews. **ADDCOMM** is suitable for the ELECTRON with ROM Box, also the BBC B O.S. 1.20 and the BBC B.

the Electron's disc filing systems



starting at & 1205, each 26 bytes long. A zero byte follows the last entry.

Table 1 shows how the 26 bytes are used. Enter Program 1, place a disc in the drive and type *MOUNT. When it is run the directory entries for all the files in the 5 directory will be listed as in Table 1.

As you can see from the listing, some fiddling is necessary to print out the name. Bit 7 of the first four characters contain the access flags, so the byte is ANDed with &7F to remove this.

If bit 7 of the fourth character is set, for example, then the entry is a directory. This is useful as we'll see later. The other flags aren't important at the moment.

The name can be up to 10 characters long. If it is less than 10 it ends with a carriage return.

Now that we know all about the files in the CSD we can create an intelligent disc menu

program. By intelligent I mean that it will examine the disc when it is run and create a menu using the information in the CSD.

This means that it will run on any disc and in any directory.

Program 11 is the listing for the Plus 3 Disc Menu. All the information is in RAM as we've seen, so it's simply a matter of extracting the data we require.

PROCatalogue looks up the names and prints them in a list on a Mode 1 screen.

If the entry is a directory, found by looking at bit 7 of the fourth letter, then the name is printed in yellow. All other files are in red.

A pointer is placed by the first item. Cursor up and down moves it up and down the list and Return is used to select an item.

If the item selected is a directory then it is made the CSD and a new menu is printed.

Escape is used to move back to the previous directory. This simply executes *BACK. The directory is obtained from &16CC and the title from &16D9.

When an item which isn't a directory is selected, its load and execution addresses are looked up. If the execution address is &8023 it must be Basic, so the file is CHAINED.

An execution address of &FFFF or -1 means it should be EXECed. All other files are machine code, which you have the option of *LOADing or *RUNning.

● That's all for this month. Next time we'll see how to transfer your unprotected software to disc and set up a *BOOT file to run your disc menu automatically.

This will be useful for owners of Curnana disc drives as well, so don't miss it.

```

10REM Plus 3 Disc Menu
20REM By R.A.Waddilove
30REM (c) Electron User
40MODE 1:4DIR
50VDU 23,1,0:0;0;0;:FX4
.1
60ON ERROR IF ERR<>17 RE
PORT:PRINT" at line ";ERR:LO
SCL:"FX4":END ELSE CLS:RAC
K
70REPEAT
80PROCatalogue
90PROCoption
10UNTIL chosen
11MODE 6:PRINT"
12IF (address/14 AND &FF
FF)=&8023 THEN OSCL "KEYO
NEW:MCHAIN ""+file$+""M"
:GOTO 190
13IF address/14=-1 THEN
OSCL "KEYO NEW:M:EXEC "+fi
le$+"M":GOTO 190
e$="(2) *RUN :file$
15REPEAT chosen=GET-48
16UNTIL chosen=1 OR cho
sen=2
17IF chosen=1 THEN OSCL
"KEYO NEW:M:LOAD ""file$+
"M"
18IF chosen=2 THEN OSCL
"KEYO NEW:M:RUN ""file$+
M"
190:FX21
200:FX130,0,128
210:FX4
22BEND
230
240DEF PROCcatalogue
250:file$=&1205-26
260REPEAT files=files+26
270UNTIL ?files=0
280:file$=(files-&1205)/DIV
26
290COLOUR 3:PRINT" Titl
e:" Dir:"TAB(22)"Escap
e:"
300COLOUR 2:PRINT TAB(0,1)
FNname(&16D9,19)TAB(16,3)FN
name(&16CC,10)TAB(29,3)"BA
CK"
310COLOUR 129:COLOUR 2:PR
INT TAB(1,31)"Use Cursor ke
ys and Return to select":C
OLOUR 128
320address=&1205:N1=0
330IF ?address=0 ENDPROC
340IF address/3/127 COLOU
R 2 ELSE COLOUR 1
350PRINT TAB(20*(N1/DIV23)
+2,6+N1/MOD23)FNname(address
,10)
360address=address+26:N1=
N1+1-(files<23)
370GOTO 330
380
390DEF FNname(AZ,length)
400B:=0:name$=""
410REPEAT C:=AZ%2 AND &7
F
420IF C%31 AND C%127 na
me$=name$+CHR$(C)
430B:=B+1
440UNTIL (AZ%2 AND &7F)=
13 OR B=length
450=name$
460
470DEF PROCoption
480REPEAT UNTIL files
490N1=0:COLOUR 3:FX21
500REPEAT
510PRINT TAB(20*(N1/DIV23)
+6,N1/MOD23):
520IF files<23 N1=N1+2*(1
(INKEY(-50) AND N1%2)-(INKEY
(-42) AND N1%(files+2-2)) EL
SE N1=N1+(INKEY(-50) AND N1
%2)-(INKEY(-42) AND N1%(file
s-1))
530PRINT " :STRING$(10,
CHR$(9)): "TAB(20*(N1/DIV23)
+6,N1/MOD23) " :STRING$(10,
CHR$(9)): "
540UNTIL GET=13
550IF files<23 N1=N1/2
560chosen=N1
570address=(&1205+chosen*
26)
580CLS:files=FNname(addr
es,10)
590IF address/3/127 THEN
chosen=FALSE:OSCL "DIR ""f
ile$ ELSE chosen=TRUE
600ENDPROC

```

Program 11

```

10REM PROGRAM 1
20a=&1205
30REPEAT
40PRINT"
50i=0
60char=a%7 AND &7F
70IF char%31 AND char%12
7 VDU char
80i=i+1:IF (a%7 AND &7F)
<>13 AND i<10 GOTO 60
90IF a/3/127 PRINT "...D
irectory" ELSE PRINT
100PRINT "Loads to k:"a%1
0 AND &FFFF
110PRINT "Execs at k:"a%1
14 AND &FFFF
120PRINT "File is "a%10
AND &FFFF: "bytes long"
130a=a+26
140UNTIL ?a=0

```

Program 1

SHARDS CHRISTMAS COLLECTION

NEW PRODUCTS
WOODBURY END

WHOOPSY

FUN ACADEMY

GALILEE

INFANT PACK

JUNIOR PACK

BUDGET BRANDS

PETTIGREWS DIARY

MYSTERY OF THE JAVA STAR

FUN TO LEARN

MONSTER MATHS

SCIENCE ONE

LASER LETTERS

FRAC ATTACK

(ALL FOR BBC AND ELECTRON UNLESS SPECIFIED OTHERWISE)

(Tape £9.95, disc £11.95). Suspense filled illustrated adventure set in a sinister village. You have 20 days to discover the strange secrets of Woodbury End. 100% machine code with real time display and interactive characters. Free certificate on completion and monthly competition.

(Tape £6.95, disc £8.95). Hilarious arcade game for whole family. Mummy wants baby to go to bed but baby has other ideas and is very resourceful. Packed with features - THE IDEAL NOVELTY GAME FOR CHRISTMAS.

(Tape £11.95, disc £14.95). Two-volume educational compendium. 22 educational games for 6-12 year olds. Covers maths, spelling, alphabet, fractions, areas, etc: Highly user friendly. Menu driven (BBC ONLY).

(Tape £6.95, disc £8.95). Historical adventure set in Biblical times. Over 120 locations. Three modes of play.

(Tape £4.95, disc £6.95). Entertaining educational games for 3-6 year olds. Contains 3 programs.

(Tape £4.95, disc £6.95). Entertaining educational games for 6-12 year olds. Contains 4 programs.

(ALL UNDER HALF ORIGINAL PRICE)

(Tape £3.95, disc £5.95). Acclaimed three-part family adventure. Text and graphics.

(Tape £3.95, disc £5.95). Comprehensive four-part educational adventure. Graphics and text.

(Tape £2.95, disc £5.95). Educational compendium for 6-12 year olds (BBC ONLY).

(Tape £2.95, disc £5.95). Maths education for 6-14 year olds. 8 difficulty levels (BBC ONLY).

(Tape £2.95, disc £5.95). Science education for 11-16 year olds. Covers lenses, mirrors, meters, thermometers and balances.

(Tape £2.95, disc £5.95). Comprehensive spelling/alphabet educational games for 6-14 year olds (BBC ONLY).

(Tape £2.95, disc £5.95). Fun with fractions for 8-14 year olds (BBC ONLY).

ALL TITLES AVAILABLE NOW BY MAIL ORDER. PHONE ACCESS/VISA ORDER THROUGH TO 01-514 4871 (9am-9pm)
OR ORDER BY POST BY COMPLETING COUPON BELOW (48 HOUR DELIVERY)

To: SHARDS SOFTWARE
FREEPOST (No stamp required)
ILFORD, ESSEX IGL 2BR

BBC ☐
ELECTRON ☐

Name

Address

Please send me

the following:

Credit card no:

Deduct £1 for every £10 spent

I enclose Cheque/PO/Access/Visa

PLEASE SEND ME DETAILS OF YOUR BBC/ELECTRON PRODUCTS ☐ FOR

EPIC ADVENTURES...EPIC ADVENTURES...EPIC ADVENTURES...EPIC ADVENTURES...EPIC ADVENTURES



The Wheel of Fortune

This game is a classic puzzle adventure with all the features you'd expect from EPIC...

PLUS

- Intelligent moving characters with varying moods. And you can talk to them too!
- Multistatement language and speech interpreters.
- Runs in real time.
- 250 locations and over 30,000 characters of text. Only Epic's compression techniques can pack so much into the Electron.

The Definitive Adventures for the Electron...

"Having now tried all the Epic Adventures, they must be the yardstick by which all other adventures for the Electron should be judged."

ELECTRON USER

"The Wheel of Fortune for the BBC and Electron is a highly recommended state-of-the-art adventure."

SHIELDS GAZETTE

"This has to be the adventure of 1984. It really is superb."

MICRONET 800

"The definitive adventure. Highly recommended."

ELECTRON USER

Our other three adventures have also received superb reviews in Electron User. They each contain approximately 230 locations and 25,000 characters of text.

TO: EPIC SOFTWARE, DEPT. E, 10 GLADSTONE ST., KIBWORTH BEAUCHAMP, LEICESTER LE8 0HL. Please Rush Me -

	CASSETTE	DISC	STATE:
.....qty THE WHEEL OF FORTUNE	£9.95	£11.95	BBC/
.....qty CASTLE FRANKENSTEIN	£7.95	£9.95	ELECTRON
.....qty THE QUEST FOR THE HOLY GRAIL	£7.95	£9.95	(Delete)
.....qty THE KINGDOM OF KLEIN	£7.95	£9.95	No Graphics on Electron

POSTAGE & PACKING FREE FOR 2 OR MORE. ADD 50p FOR ONE.

I enclose Cheque/P.O. to the value of (Payable to 'Epic Software')

NAME

ADDRESS

POST CODE

All programs available for immediate despatch. Dealer enquiries welcome: Help Service. Send letter if you don't want to cut magazine.

*** NEW: FREE HELP SHEETS NOW AVAILABLE. EACH CONTAINS 100'S OF CLUES - JUST SEND SAE ***

Now YOU- and your Electron - can enter the exciting, ever-changing world of telecomputing!



The fastest growing, most exciting field of micro-computing is communications. Just one phone call away there's a vast range of fascinating electronic information and services such as:

★ **MicroLink:** A specialised service on Telecom Gold, Britain's leading carrier of electronic mail. MicroLink gives you your own private letter box, the ability to send and receive telex messages, to send telemessages for next-day delivery to any address in the UK or USA, ready access to up-to-the-minute computer news, a large range of mainframe services and much, much more.

★ **Prestel/Micronet:** More than 300,000 pages of information, electronic magazines and special interest clubs, with news, advice and reviews. And there's a wealth of software just waiting to be downloaded directly into your Electron.

★ **Bulletin Boards:** News, views, software and specialist help - they're all available on the scores of home-brewed electronic notice boards that are springing up all over the country.

This *Electron User* communications package includes the Pace Nightingale modem, RS423 interface and Tellstar software, FREE registration to MicroLink (worth £5), FREE quarter's subscription to Micronet (worth £10), and your chance to win a fabulous holiday in New York! (The Plus 1 is not included.)

For many months we at *Electron User* have been looking for a communications package sophisticated enough to meet our exacting requirements.

Now at last it's here - the Tellstar/Nightingale combination.

The Pace Nightingale is a tried and tested, fully BT approved, multi-baud modem that plugs into a standard telephone socket.

Telstar complements it perfectly. It allows easy access to all the major electronic information providers, including MicroLink and Prestel, and while not available in full colour it contains all the other features expected of advanced communications software.

And of course, the package includes the necessary serial interface to link directly with your Electron via your Plus 1.

Now there's nothing to stop you playing your part in the communications revolution - dial up, log on and have fun!

Normal retail price: £160.95 (incl. VAT)

**Electron User
special price: £145** (SAVE £15.94)

including VAT, postage & packing

TO ORDER, PLEASE USE THE FORM ON PAGE 61

MEKON RAIDERS

NEW
For ELECTRON & BBC

A TACTICAL ARCADE ACTION GAME

- 3D graphics
- Tactical grid
- Defend earth from the advancing Mekon raiders.
- Battle through space attacks.
- Descend to the surface of the Mekon battle stars.
- Destroy the Mekon battlestars before they destroy earth.
- Exciting - fast machine code action.

£6.95 INC VAT & POSTAGE

Microbyte Software (EL 12)
18 Hilgrove Road
Newquay
Cornwall TR7 2QZ.
ACCESS
HOTLINE
24 HR.
06373 6886

Games are available for
Electron & BBC by mail
order from Microbyte
Software Post FREE.

ER*BERT

Join ER*BERT in his
zany cubic domain.
Avoid coily - Boris
- and other
unwelcome guests.
Four different
scenes each with
10 levels, fast -
funny, addictive!



£4.95 INC VAT & POSTAGE



Twin pack of
competitive
games - arcade
action - strategy
and skill.

PINBALL & REVERS



£5.95 INC VAT & POSTAGE

**MICROBYTE
SOFTWARE**

QUAL-SOFT

THOUGHTWARE

Sports simulations

"I find the packaging of this game beaten by only Revs and Elite, and the contents of the game beaten by none". Jason Sinclair, Leeds.

Qual-Soft comment: We are pleased to be compared with these excellent games and would point out that we are also **£5 CHEAPER THAN EITHER!**

In 1966 Alf Ramsey proved that English club soccer players, with intelligent management, could not only dominate European club football, but could take on, and beat the rest of the world at International level. Could you do the same in ...

TAPE 1 QUALIFIERS

MEXICO '86

TAPE 2 FINALS

A WORLD CUP MANAGEMENT SIMULATION

Summer 1984 and English International football is at its lowest ebb. We have failed to qualify for the European Nations Cup, and had a string of very poor International results. In a few months we will set out on the '86 World Cup qualifying trail. You have been given the most important job of restoring English pride in their football. You have a match in Paris, the USSR at Wembley, and a South American tour, to assemble a team, first to qualify, and then to beat the world's best in Mexico.

TAPE 1 (Qualifiers)

- * Current squad of 16 players + 20 user defined players.
- * Friendlies in Paris, at Wembley + South American tour.
- * ANY team formation you choose. 2 from 5 substitutes.
- * In match tactics: any no. of individual player adjustments.
- * Your qualification group: full results and table

TAPE 2 (Finals)

- * Choose a 20 man squad to take to the finals.
- * Group of 4 prelims. 16 to final knockout comp.
- * Extra Time, PENALTY SHOOT-OUTS, where relevant.
- * Formation and strength information on opposition.
- * 2 from 9 substitutes (the FA tells us so).

ENGLAND'S GAMES: FULL PITCH, 22 MAN, 3D GRAPHICS & SOUND EFFECTS

QUAL-SOFT comments: With 5 levels of play, 12 depths of sophistication, and "fun" graphics, this game can be enjoyed by an 8 year old youngster as a "fun" game, and by the most sophisticated as a tactical/strategy challenge of the highest order.

PRICE & SUPPLY: Tape1 + Tape2 + 20 page book + p&p ONLY £9.95. ACCESS 'phone orders 1/2 days, orders by 1st class post 3/4.

QUAL-SOFT, Tel: 0438
Dept. EU, 721936
18 Hazelmere Rd.,
Stevenage, Herts SG2 8RX.

Please supply:
MEXICO '86
Electron ☐
BBC 'B' ☐

Name:
Address:
Access No. (if applicable)

MIKE PLUMMER
offers teachers – and
pupils – an interesting
aid to mastering
musical notation . . .

NOTEST

WHEN my son started to learn to play the recorder, I wondered if there was any way in which he could use our Electron to help him.

At about the same time his music teacher at school asked if I could transform an idea of hers into a computer program for the school's BBC Micros.

I had already written a program to show the fingering on a recorder and how it relates to the musical notes. Notest is the result of combining these ideas.

The program has three distinct phases. The first is

when the graphics characters, title strings and plotting data are initialised and the various options available during the test are selected.

The options are selected from a menu page which can be recalled at any time by pressing Escape.

Firstly, a starting and finishing level of difficulty are selected. The notes which are available at any level of the test are shown.

Other options include whether the sound effects are to be on or off, and whether the program will automatically

go on to the next level of difficulty when a test has been completed successfully.

Also you can choose how many tries you will have to get a test at any level correct before being put out of your misery.

The next phase is the test itself. A treble staff is drawn on the screen and 10 notes, selected from all of those available at the current difficulty, are drawn at random on the staff.

All the notes available are shown by name above the staff and the program will only accept one of these as an answer.

You get three attempts to get the name of the note being pointed at correct.

If the answer is right the

note is played, if wrong a rude noise is made and the answer is written under the note. This process is repeated for all the notes.

Finally the program checks if all of the answers are correct and, if so, it moves to the next level – unless it is at the final level, when it prompts for another person to try.

If the test was not correct and the total number of attempts at that level has been exceeded, the program also asks for another user.

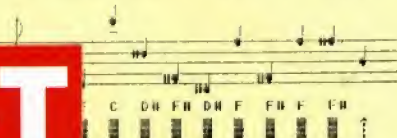
If the manual mode has been selected the program will ask if you want to go to the next level.

I know it sounds complicated, but children seem to

The very difficult test.

Choose from the ones below by typing its name followed by RETURN

C C# D D# E F F# G G# A A# B



What note being pointed at ?

VARIABLES

ok	TRUE if test was correct.
tries%	Attempts so far.
atmp%	Maximum number of tries allowed.
auto%	TRUE if level raised automatically.
diff%	Current level.
strd%, find%	Starting and final difficulty.
name\$	User name.
num\$()	Describes n'th test.
key\$	Key press.
diff\$()	Stores available notes for any level.
i%, p%, n%	General counters.
deg\$()	Describes the degree of difficulty.
quest\$()	Stores the questions for any test.
ypos%	Byte array for note position on staff.
ptr%	Offset to byte arrays.
byte%	Byte read from byte array.
crt\$	Characters for a crotchet.
vnt\$()	Characters for any note on the staff.
nt\$()	Names of notes.
bnt%	Byte array storing type of note to draw.
pnt%	Pointer to note under test.
blnk\$	Blanks out pointer.
tot%	Score.
lquest%	Note being pointed at.
lgo%	Counts number of tries at any note.
nt%	True if answer is correct.
valid%	True if note is valid for FNggetnote.
lans\$, lf%, lch\$	Local variables for FNggetnote.

PROCEDURES

instructions	Display instructions and current level of test.
setup	Set up graphics and plotting data. Also the user options are set up here.
getname	Get user's name.
playnote (nt%, f%)	Play note number n% for time f%.
stave	Draw a treble staff.
shownote (nt%, xpos%)	Draw note number nt% at position along the staff of xpos%.
setquestion	Set up the array quest\$ with a random selection of notes.
answer	Get answers until the test is completed successfully or set number of attempts is exceeded.
FNggetnote	Returns a string describing a valid note.
rasp	Make a rude noise.
score	Assess score and move on to next level if OK.
nextgo	Invite next user to try.

21st. Software

(BBC VERSIONS AVAILABLE)

PRESENTS A SELECTION OF HARDWARE, UTILITIES & SOFTWARE FOR THE ELECTRON

PLAY GAMES AT
YOUR OWN SPEED
OR FREEZE FRAME
WITH
"SLOMO"
R.R.P. £14.95 OUR PRICE £13.45

FIRST BYTE JOYSTICK INTERFACE
Includes conversion tape
R.R.P. £12.95 OUR PRICE £12.95
TOTAL £32.94 OUR PRICE £27.98

PLUS SOFTWARE ACORN/ST. GAMES DISC
(Contains: Maze, Froggy & Planetside)
R.R.P. £18.75 OUR PRICE £17.95
Deduction R.R.P. £19.75 OUR PRICE £17.95

KANSAS CITY
GOLD PACK
3 Castles, Multi Level
Excellent Full Colour Graphics
1 SNAKE (ARC Revisited)
2 MANIC MOWER (Protect Your Taste!)
3 CAVERNAR (Only for Gold & Diamonds)
R.R.P. £26.95 OUR PRICE £25.95

SUPER SMASH PACK 3 SUPERB GAMES
Pony Pegasus, Catapult, Zam King Jax
Fantastic value, all 3 for just £7.95

VINE MICROSD ACCOM
R.R.P. £28.00
OUR PRICE £28.00

SLODGER BUSINESS PACK
Rombox M11
Stardust (Word Processor)
Starburst (Database)
R.R.P. £199.40
OUR PRICE = £99.40 only

SLODGER ROMBOXES
ROMBOX R.R.P. £44.85 OUR PRICE £41.85
ROMBOX R.R.P. £89.95 OUR PRICE £84.95
Built in Commodore Printer Interface + Free
Printer ROM R.R.P. £89.95 OUR PRICE £84.95

POWERSOFT ROM JOYSTICK
INTERFACE
R.R.P. £24.95 OUR PRICE £22.85

SLODGER SOFTWARE ROMS
ELKMAN R.R.P. £17.50 OUR PRICE £15.75
STARDUST (touchscreen code manual)
R.R.P. £22.50 OUR PRICE £20.25
T2P7 (True to Game) R.R.P. £19.95
OUR PRICE £18.65

JACOBUS PACK
3 Castles, Board, Strategy Command, Desk Only
R.R.P. £20.97 OUR PRICE £19.45

TALENT 2 PACK
2 Castles, WEST (Test id) £7.95
LASER REFLEX (Exc. Gen) £7.95
R.R.P. £12.90
OUR PRICE £4.95

R.R.P.	OUR PRICE
A/NP	
Bargain Pack	14.95 12.95
AARDVARK	
8.95 5.95	
A.C. PRODUCTS	
Advanced Dice Tossler Rom	34.50 32.20
ACORN/ST	
Elite	12.95 11.85
Music Mushrooms	11.95 10.95
Smokes	5.99 5.99
Sphinx Adventure	5.99 5.99
Starship Command	5.99 5.99
Acropolis	5.99 5.99
Free Fall	5.99 5.99
Metroid	5.99 5.99
Maze	5.99 5.99
Beaver	5.99 5.99
Philosophers Quest	5.99 5.99
Snapper	5.99 5.99
Murders	5.99 5.99
Huqar	5.99 5.99
Chess	5.99 5.99
Business Games	5.99 5.99
Deck Diary	5.99 5.99
Fishing	5.99 5.99
Farth	16.95 16.95
Lip	16.95 16.95
Personal Money Management	5.99 5.99
Tree of Knowledge	5.99 5.99
View Rom Cartridge	29.99 27.85
Viewmaster Rom Cartridge	29.99 27.85
Hopper ROM (Cart)	14.95 13.45
Snapper ROM (Cart)	14.95 13.45
SD/Plasma ROM Cart	19.00 14.80
Lip ROM Cart	29.95 27.05
ACORN/ST/BES	
Happy Letters	8.95 7.95
Timesaver One	8.95 7.95
Happy Numbers	8.95 7.95
Wordfart	8.95 7.95
Quix	9.95 8.95
ACORN/LINKWOOD	
German	14.95 12.85
French	14.95 12.95
Italian	14.95 12.95
ACORN/BERG	
Revelation	12.95 11.75
Source Fiction Quiz	12.95 11.75
ADVENTURE GAMES	
Adventure Manager	8.95 7.95
Belfin	9.95 8.95
ADVENTURE INT.	
Gambler	7.95 6.95
The Monk	7.95 6.95
Spidean	7.95 6.95
Adventureland	7.95 6.95
The Count	7.95 6.95
Mystery Funnhouse	7.95 6.95
Pyramid of Doom	7.95 6.95
Succulent Clamptastic	7.95 6.95
Strange Odyssey	7.95 6.95

R.R.P.	OUR PRICE
ALLIGATA	
Blagga	7.95 6.95
Barren Bungle	7.95 6.95
Contract Bridge	9.95 8.95
Gambler	7.95 6.95
Tarzan Boy	7.95 6.95
Nightworld	7.95 6.95
ATARIS/ST	
Robotics	9.95 8.95
ANIRGO	
Jump Jet	9.95 8.95
A.S.K.	
Numerical Painter	9.95 8.95
Numerical Guide	9.95 8.95
Best 4 English	19.95 18.45
Best 4 Maths	19.95 18.45
BUG BYTE	
Town Kingdom Valley	9.50 8.50
COMSOFT	
Serpents Lair	4.45 3.95
Playbox	4.45 3.95
S.A.S. Commando	4.45 3.95
C.D.S.	
Brute Savage	7.95 6.95
C.R.I.	
Test Match	6.95 5.95
DR. SOFT	
TAT Flight Sim	7.95 6.95
Garf	7.95 6.95
Phoenix Casino	9.95 8.95
D.A.C.	
Flyer Sim 747 (JAZZ)	9.95 8.95
Symphony Generator	9.95 8.95
Baby Chortles Secor	11.95 10.95
DURELL MASTEN	
Geoff Capes	8.95 7.95
Moviechat	8.95 7.95
Brian Jacks Superstar	7.95 6.95
Canoe Line	8.95 7.95
Reddie Kid Jump	7.95 6.95
Gambler's Castle	7.95 6.95
EDGE COMPUTERS	
Microage	8.95 8.95
ENGLISH SOFTWARE	
Art Best Jack	7.95 6.95
Kissin' Cousins	4.95 4.25
EPIC SOFTWARE	
The Wizard of Fortune	8.95 8.45
Castle Frodo	7.95 7.55
The Queen of the Holy Grail	7.95 8.55
Knights of Klenn	7.95 8.55
GLOBAL	
Op. Carstaker (Cleaning kit)	10.95 9.95
GOLM LTO	
Education I	8.00 7.00
Education II	8.00 7.00
Farm with Words	8.00 7.00
Farm with Numbers	8.00 7.00
Signage	8.00 7.00
HEWSON	
Harbinger A.C.	7.95 6.95
HIGHLIGHT SOFT	
Reading Pack I	7.95 6.95
Reading Pack II	7.95 6.95

R.R.P.	OUR PRICE
Reading Pack 3	7.95 6.95
Reading Pack 4	7.95 6.95
ROMBOX SOFTWARE	
Gambler's Maze 2	12.00 10.85
Gambler's Maze 5	12.00 10.85
ICOM SOFTWARE	
Caution Colors	7.95 6.95
Drum Music	7.95 6.95
Bus Fren	7.95 6.95
Way 1	7.95 6.95
Wings	7.95 6.95
INCENTIVE	
Confusion	8.95 5.95
INTERCEPT	
Tales of Arkan/Knights	6.00 5.00
KANSAS CITY	
Ring of Time	3.50 3.50
Moon Buggy	6.95 5.95
KOSMOS SOFTWARE	
French Mysteries A & B	8.95 7.95
German Mysteries A & B	8.95 7.95
Spanish Tutor A & B	8.95 7.95
Answer Book Jan. or Sem	9.95 8.95
Answer Book Spans	9.95 8.95
Identify Europe	7.95 6.95
L.G.L.	
Micro Maths (24 pages) U. Level	24.50 21.50
Micro English (24 pages) U. Level	24.50 21.50
Micro Maths (A. Level)	24.50 21.50
LONGMAN'S SOFTWARE	
First Movers (Chans 8 + 1)	9.95 8.95
Master Key (Typing Tutor)	9.95 8.95
MACSEEN SOFT	
Black Burners	7.95 6.95
MELBOURNE HOUSE	
Classic Adventure	8.95 5.95
Hempstead House	8.95 5.95
Farmer's Journey	8.95 5.95
M.C. LOTHLOREN	
Redcars	6.95 5.95
Paras	6.95 5.95
Johnny Rite	6.95 5.95
Special Operations	6.95 5.95
Warrior	9.95 8.95
Barbarians	6.95 5.95
MICROBYTE	
El'bert	4.95 3.95
Disruptor + Reverse	4.95 3.95
MICRODEAL	
Space Shuttle	8.00 7.00
MP SOFTWARE	
Sedric Castle	7.50 6.50
Valley of the Kings	7.50 6.50
Frozen Wood	7.50 6.50
Woodland Temple	7.50 6.50
Blue Dragon	7.50 6.50
Survivor	7.50 6.50
MICROPOWER	
Chess	7.95 6.95
Jet Power Jack	6.95 5.95
Positron	6.95 5.95
Swag	6.95 5.95
Overkill	6.95 5.95

R.R.P.	OUR PRICE
Chess	7.95 6.95
Killer Gentils	7.95 6.95
HOLLY SOFTWARE	
U.X.B.	7.95 6.95
Pinball Wonders	7.95 6.95
Kids in Factory	7.95 6.95
Architect Masters	8.95 7.95
Galactic Command	7.95 6.95
Casualties	7.95 6.95
Stack Gun	8.95 5.95
Whirlpool	8.95 5.95
Rubble Trouble	8.95 5.95
Adventure	7.95 6.95
MIRACROSS	
Hunter Snake Force	9.95 8.95
Count with Dimes	2.95 2.95
Link Shave	2.95 2.95
First Street	6.95 5.95
Home Thru with Mr. Mart	7.95 6.95
Quick Thinking	7.95 6.95
ODIS	
Age High	14.95 12.95
OCEAN	
Hotchback	6.95 5.95
QUALSOFT	
Soccer Supreme	9.95 6.95
SALAMANDER	
127 Flight Sim	9.95 8.95
Graphics Screen	9.95 8.95
SHARDS	
Empire	9.95 5.95
Paragon's Diary	7.95 6.95
Mystery of Joss Star	7.95 6.95
Golfers	9.95 5.95
Woodstock II	8.95 5.95
Whooey	8.95 5.95
SOFTWARE INVASION	
3D Bore Alley	7.95 6.95
Gambler	7.95 6.95
Blitzkrieg	7.95 6.95
Super Pool	7.95 6.95
Votes	7.95 6.95
SLODGER	
Dragon (12 player mystical key)	7.95 3.00
STARBUCKS	
Superdog	7.95 6.50
Trotalogue	8.00 7.00
Polar Perils	7.95 6.95
SUPERB SOFTWARE	
Mr. Wiz	7.95 6.95
Smash and Grab	7.95 6.95
Overdrive	7.95 6.95
Tempest	8.95 6.95
Repton	8.95 6.95
Death Star	9.95 8.95
Golden 2	9.95 8.95
TYNOSOFT	
Sidganger (Sdgs)	27.95 26.95
U.S. GOLD	
Beach Head	29.95 27.95
VISIONS/DSM	
Snakey	8.95 7.95
Overlord/Conan	7.95 6.95
Sim	7.95 6.95

ALL PRICES ARE INCLUSIVE OF VAT AND CARRIAGE
OVERSEAS ORDERS PLEASE ADD £1.00 THEN 50p FOR 2ND AND 3RD ITEMS EACH
Most Electron and BBC titles are available on request with the guarantee of at least £1.00 off the R.R.P.

BOX OF 10 C15 COMPUTER CASSETTES £4.50 inc. VAT & P&P

We guarantee all titles are originals. We offer a quick and reliable service. Most Electron and BBC titles are available on request with the guarantee of at least £1.00 off the R.R.P.

Please send me:

1. £

2. £

3. £

4. £

TOTAL £

Cost

Please make cheque payable to:

21st Software.

Send orders to:

21st SOFTWARE
20 Woodside Drive
High Lane, Stockport SK6 8HU
Tel: Disley (06632) 3160.

Name

Address

Post Code

Tel. No.

From Page 51

be able to cope with it very well, and they enjoy using it.

The notes are stored as user defined characters, and plotted on the stave with VDU 5 using positions stored in a byte array called *ypos%* and accessed using byte indirect

tion. This leads both to a faster executing program and more economical use of memory.

The notes can be one of six orientations, depending on whether they are between the lines of the stave, across them, above or below them.

This data is stored in the byte array *bnr%* and accessed

in the same way.

Each note is assigned a number from 1 to 25 and a test is set up by setting the string array *quest\$(10)* to a random selection of notes from the string array *diff%*. The actual string being used is indexed by *diff%*, the level of difficulty.

String arrays are used

because it is easier to use the Basic function INSTR to see if the answer given is a valid one.

One improvement I suggest would be to enable the test to be carried out in a different key signature, but you would have to generate a different version of *bnr%* for each one. Over to you, maestro...

```

:OPEN Musical notation t
:es:
20REM ** NOTEST **
25REM /c/ Electron User
30REM MIKE PLUMMER
40BERROR GOTO 170
50+FYCS5
60+FY4.1
70MODE:4:VDU 22.1.0:0:0:0
:19.0.0:19.1.0:0:0:0:FX11.0
80PROCsetup
90REPEAT
100PROCinstructions
110PROCquestion
120PROCanswer
130PROCscore
140UNTIL FALSE:END
150:
160REM -- Return to menu
when ESC --
170 IF ERR=17 THEN VDU 4,
24.0:0:127:1023:RUN ELSE
MODE:REPORT:PRINT " at lin
e ":ERR:END
180:
190REM -- Print instructi
on menu --
200DEF PROCinstructions
210IF NOT ok tries=tries
+1 ELSE IF auto% diff%dif
f%:tries=1
220IF diff%find% OR tri
es%:atop% PROCnotes:REPEAT
UNTIL GET%="":PROCnote:
230CLS:PRINT "TAB(3)"Mus
ical note test by M.J.Plum
mer"TAB(3)-----
240PRINT"TAB(5)"Hello, "
:note%:"TAB(5)"This is v
our "num(tries%)" try at
the"TAB(5):deof(diff%):"
test."
250PRINT"TAB(5)"The com
puter will ask you to tell"
TAB(5)"what each of ten not
es are and"TAB(5)"you will
have 3 tries at each note."
260PRINT"TAB(5)"You have
:atop%:tries%:1:IF atop%
:tries%+1 PRINT " go:ELS
E PRINT " goes":
270PRINT" left to get a t
est"TAB(5)"at this level r
ight:IF strd%find% PRINT
" and if you do"TAB(5)"the
next one will be more"TAB
(5)"difficult." ELSE PRINT"
280PRINT"TAB(5)"If you c
annot get it right in "ata
p%TAB(5)"the computer will
show you the"TAB(5)"answe
rs and someone else can"TA
B(5)"have a go."
290 PRINT TAB(10,30)CHR%
+Press SPACE to start:REP
EAT +FX21.0
300UNTIL GET%=" "
310ENDPROC
320:
330REM -- Define characte
rs and tune --
340DEF PROCsetup
350CLS:PRINT "TAB(3)"Mus
ical note test by M.J.Plum
mer"TAB(3)-----
360PRINT " (1) G,A,B"
+ (2) D,E,G,A,B" (3) D,
E,G,A,B,C above middle,B"
370PRINT " (4) Scale of C
major & B" (5) Scale of C
major & D,E,F,B" (6)
Two octaves from middle C"
incl B)
380REPEAT:FX21.0
390PRINT TAB(1,6)Select
starting difficulty:--
+CHR%:strd%GET=4B:UNTIL s
trd%0 AND strd%7:PRINT TA
B(1,6) Starting difficu
lty is "strd%:" +CHR
%
400REPEAT:FX21.0
410IF strd%6 PRINT TAB(1
,20)Select final difficult
y ("strd%:--6) 1:-- +CHR
%6:find%GET=4B:UNTIL find
%strd% AND find%7 ELSE 1
find%6
420PRINT TAB(1,20) Fi
nal difficulty is "find%:"
+CHR%
430VDU:FX210.0
440REPEAT:PRINT TAB(1,22)
'Do you want sound effects
(Y/N) "key%:CHR%GET AND
15F:UNTIL INSTR"Y"key%
:PRINT TAB(1,22) " Sound
effects are " :IF key%="Y"
PRINT "ON "ELSE
PRINT "OFF"
450VDU:IF key%="N" THEN
+FX210.1
460diff%strd%-1:tries%1
470REPEAT:PRINT TAB(1,24)
'How many tries at problem
(1-9) "key%:GET=4B:UNTIL
atop%0 AND atop%10:VDU:
PRINT TAB(1,24) " Number
of tries "atop%:"
+CHR%
480REPEAT:PRINT TAB(1,26)
'Automatic move to next lev
el (Y/N) "key%:CHR%GET
AND 15F:UNTIL INSTR"Y"key%
:IF key%="Y" auto%TRUE
ELSE auto%FALSE
490ok=strd%find%:IF ok
auto%FALSE:GOTO 520
500PRINT TAB(1,26) "
:IF auto% PRINT "Automatic"
:ELSE PRINT "Manual":
510PRINT " Level change
"CHR%
520PRINT TAB(5,20)"Press
ESCAPE to reset these"
530PRINT TAB(5,30)"Press
SPACE to start the test"+CH
R%:REPEAT:FX21.0
540UNTIL GET%=" "
550IF NOT auto% diff%dif
f%+1
560DIM diff%(6)
570diff%(1)=CHR%8+CHR%10+
CHR%12
580diff%(2)=diff%(1)+CHR%
3+CHR%5
590diff%(3)=diff%(2)+CHR%
13+CHR%15
580diff%(4)=diff%(3)+CHR%
1+CHR%6
610diff%(5)=diff%(4)+CHR%
17+CHR%18+CHR%20
620diff%(6)=""FOR i%=1TO
25:diff%(6)+diff%(6)+CHR%i%
:NEXT
630DIM deof(6),quest%(10)
640deof(1)=""very easy"
650deof(2)=""easy"
660deof(3)=""slightly diff
icult"
670deof(4)=""fairly diffic
ult"
680deof(5)=""difficult"
690deof(6)=""very difficu
lt"
700DIM num%(9)
710RESTORE 720:FOR i%=1 T
O 9:READ num%(i):NEXT
720DATA first,second,thir
d,fourth,fifth,sixth,seven
th,eighth,ninth
730VDU23,134,52,76,132,13
2,132,68,56,0
740VDU23,235,52,124,252,2
52,252,134,56,0
750VDU23,236,4,4,4,4,4,4,
4,4
760VDU23,239,0,0,0,255,0,
0,0,0
770VDU23,240,255,255,255,
255,255,255,255,255
780DIM ypos% 26:ptr%1:=PE
STORE 000:ypos%:=2
790REPEAT READbyte%:pos%
:ptr%:=byte%ptr%+1:UNTIL
ptr%26
800DATA0,0,15,15,30,45,45
,60,60,75,75,90,105,105,120
,120,135,150,150,165,165,18
0,180,195,210
810ptr%:=CHR%236+CHR%10+CH
R%8+CHR%235
820DIM vnt%(6):vnt%(0)=""
830vnt%(1)=""crt%+CHR%8+CH
R%239
840vnt%(2)=""vnt%(1)+CHR%8+
CHR%8+CHR%8+CHR%8

```

Notest listing

From Page 53

```

850vnt$(3)=crt$
860vnt$(4)=crt$+CHR$(CHR
$B)+$
870vnt$(5)=crt$+CHR$(B)+
880vnt$(6)=vnt$(1)+CHR$(10
+CHR$(B)+$
890DIM rnt$(25):DIM bnt$
25:RESTORE 910
900ptrZ=1:7bntZ=0:rnt$(0)
="None":REPEAT:READbyteZ:bnt
Z:ptrZ=byteZ:READrnt$(ptrZ
):ptrZ=ptrZ+1:UNTILptrZ=26
910DATA 1,C,2,C,3,D,4,D,
3,E,3,F,4,F,3,G,4,G,3,A,
4,A,3,B,3,C,4,C,3,D,4,D,
3,E,3,F,4,F,3,G,4,G,1,A,2
,A,5,8,6,C
920PROCgetname
930ptr$="":CHR$(B)+$+CN
R$(10+CHR$(B)+$+CN
940bnt$=CHR$(240)+CHR$(10+C
HR$(B)+CHR$(240
950ENDPROC
960:
970REM -- Get the users n
ame --
980DEF PROCgetname
990CLS:PRINT TAB(1,10):I
NPUT "What is your name ? " n
ame$:CLS
1000ok=TRUE
1010ENDPROC
1020:
1030REM -- Play note nZ fo
r time IZ --
1040DEF PROCplaynote(nZ,I
Z)
1050SOUND #10,0,0,1:IF nZ=
0 ENDPROC
1060SOUND 1,-15,nZ*452,I
1070ENDPROC
1080:
1090REM -- Draw treble sta
ve --
1100DEF PROCstave
1110VDU24,0:200:1279:570:
CLS:MOVEB,300
1120PLOT1,1279,0:PLOT0,0,3
0:PLOT1,-1279,0:PLOT0,0,30
:PLOT1,1279,0:PLOT0,0,30:PLO
T1,-1279,0:PLOT0,0,30:PLOT1
,1279,0
1130PLOT0,-1240,-150:PLOT1
,20,0:PLOT1,0,225:PLOT1,20,
-35:PLOT1,-70,-120:PLOT1,65
,-40:PLOT1,20,10:PLOT1,-30,
20

```

```

1140ENDPROC
1150:
1160REM -- Show a note on
stave --
1170DEF PROCshownote(tntZ,
xposZ)
1180VDU5:MOVExposZ,(yposZ?
tntZ)+315
1190PRINTvnt$(bntZ?7tntZ):
VDU4
1200ENDPROC
1210:
1220REM -- Set the questio
ns --
1230DEF PROCsetquestion
1240quest$(0)=MID$(diff$(d
iffZ),RND(LEN(diff$(diffZ)
)),1)
1250FOR iZ=1 TO 10
1260REPEAT
1270quest$(iZ)=MID$(diff$(
diffZ),RND(LEN(diff$(diffZ)
)),1)
1280UNTIL quest$(iZ)<>ques
t$(iZ-1)
1290NEXT
1300ok=TRUE
1310ENDPROC
1320:
1330REM -- Get answer unti
l right or numbers of tries
exceeded --
1340DEF PROCanswer:totZ=0
1350CLS:PROCstave
1360FOR iZ=1 TO 10
1370PROCshownote(ASC(quest
$(iZ)),iZ*100+155)
1380NEXT
1390PRINT " The "ideq(diff
Z):" test." STRING$(40,"="
)
1400PRINT " Choose from
the ones below by typing "
" its name followed by RETU
RN"
1410jZ=1:FOR iZ=1 TO LEN(d
iff$(diffZ))
1420questZ=ASC(MID$(diff$(
diffZ),iZ,1))
1430IF diffZ>2 AND diffZ<
6 AND iquestZ(15) OR (diff
Z<3 OR diffZ=6 AND iquestZ
<13) PRINT TAB(iZ*3,13):rnt
$(iquestZ):jZ=jZ+1
1440NEXT
1450VDU24,0:1279:1023:
1460FOR iZ=1 TO 10:ntZ=FALSE
1470iquestZ=ASC(quest$(iZ)
):VDU5:IF iZ>1 MOVE (iZ-1)*

```

```

100+155,200:PRINT bnt$
1480MOVE iZ*100+155,200:PR
INT ontr$:VDU4
1490goZ=i:REPEAT:validZ=F
ALSE:REPEAT ans$=F:qnetnote
1500FOR jZ=1 TO LEN(diff$(
diffZ)):IF ans$=rnt$(ASC(MI
D$(diff$(diffZ),jZ,1)) val
idZ=TRUE
1510NEXT:UNTIL validZ
1520IF ans$=rnt$(iquestZ)
THEN PROCplaynote(iquestZ,2
0):ntZ=TRUE ELSE PROCcrasp
1530goZ=goZ+1:UNTIL ntZ
OR goZ=4
1540IF NOT ntZ ok=FALSE EL
SE totZ=totZ+1
1550VDU5:MOVE iZ*100+155,2
0:PRINT rnt$(iquestZ):VDU4
1560NEXT
1570ENDPROC
1580:
1590REM -- Set a string de
scribing a note from keyboa
rd --
1600DEF FNetnote
1610LOCAL lans$,liZ:REPEAT
1620PRINT TAB(0,30):STRING
$(39,"")+CHR$(13:
1630INPUT " What note bein
g pointed at ? " lans$
1640IF LEN(lans$)=0 THEN U
NTIL FALSE
1650lch$=CHR$(0):liZ=1:REPE
AT
1660lch$=MID$(lans$,liZ,1)
1670If lch$="a" AND lch$<
="z" lans$=LEFT$(lans$,liZ-1
)+CHR$(ASC(lch$)+45F)+M
ID$(lans$,liZ+1)
1680If lch$=" " lans$=LEFT$
(lans$,liZ-1)+MID$(lans$,li
Z+1) ELSE liZ=liZ+1
1690UNTIL lch$=" "
1700IF LEN(lans$)>2 UNTIL F
ALSE
1710lch$=LEFT$(lans$,1):IF
lch$<"A" OR lch$>"6" UNTIL
FALSE
1720IF LEN(lans$)=2 IF MID
$(lans$,2,1)<" " UNTIL FAL
SE
1730UNTIL TRUE
1740=lans$
1750:
1760REM -- Rude noise --
1770DEF PROCcrasp
1780FOR pz=4 TO 7:SOUND 0
,-15,pZ,1:NEXT

```

```

1790ENDPROC
1800:
1810REM -- Print score --
1820DEF PROCscore
1830goZ=INKEY(200)
1840CLS
1850PRINT TAB(2,2):"Well,
"names$,""TAB(2)"you have
scored "totZ:" out of 10
in the "TAB(2):deg$(diffZ)
:" test."
1860IF OK PRINT TAB(2)"MEL
L DONE!" :IF diffZ=findZ
GOTO 1920
1870IF OK AND strd$(findZ)
PRINT "Now you can try a mor
e""TAB(2)"difficult test."
1880IF OK AND NOT autoZ PR
INT "TAB(2)"Do you want to
(Y/N):?":REPEAT key$=CHR$(6
ET AND 45F):UNTIL INSTR("YN
",key$):IF key$="Y" diffZ=d
iffZ+1:triesZ=1
1890IF totZ>7 AND totZ<10
PRINT " Good, just try a l
ittle harder."
1900IF totZ<6 AND totZ>4 P
RINT " Not bad, you got at
least half the"" test rig
ht."
1910IF totZ<6 PRINT " I t
hink you can do a little be
tter."
1920PRINT TAB(5,30)"Press
SPACE to go on"
1930REPEAT UNTIL GET=32
1940ENDPROC
1950:
1960REM -- Get next pupil
--
1970DEF PROCnextgo
1980triesZ=1
1990CLS:PRINT "TAB(2)"Tha
t is the end of your turn."
"TAB(2)name$,""TAB(2):
2000PRINT TAB(10,20):IF o
k PRINT "SUCCESSFUL" ELSE P
RINT "FAILED AT LEVEL ":dif
fZ
2010PRINT TAB(10,30)"Press
SPACE to go on":REPEAT UNT
IL GET$=" "
2020ENDPROC

```

This listing is included in this month's cassette tape offer. See order form on Page 61.

YOU can go for gold ...with the



Fancy pitting yourself against the world's best at this summer's Olympics?

You can do so without going anywhere near Los Angeles — with the most challenging package of programs of 1984.

MICRO OLYMPICS is more than a game. It's a brilliantly written collection of **ELEVEN** track and field events.

And because we know we're going to sell many thousands of them we've brought the price right down — to just £5.95.

Ever imagined yourself as another Seb Coe? Then try to run against the world record holder at 1500 metres. And if that distance is too much for you then there's always the 100, 200, 400 and 800 metres to have a go at.

Not much good at running? Don't worry, **MICRO OLYMPICS** has many more challenges for you. Why not try your skill at the high jump or the long jump?

And if you can't beat the computer at running or jumping then you can always throw things around in frustration! The trouble is that it's just as hard to be a champion at the discus, the hammer or the javelin.

And the pole vault takes the event to new heights!

Yes, it's fast, furious fun, pitting yourself against the world's best times and distances on your micro.

You may not be another Steve Ovett or Alan Wells, but with practice you **COULD** become the Micro Olympics Champion!



Also available from WHSmith
and all other leading stores



Play Micro Olympics
— and let your fingers
do the running!

Send for it today

Please send me _____ copy/copies of

Micro Olympics

☐ I enclose cheque made payable to
Database Publications Ltd.
for £

☐ BBC B' cassette £5.95
☐ Electron cassette £5.95
☐ BBC 40-track disc £7.95
☐ BBC 80-track disc £7.95

Please tick box

I wish to pay by

☐ Access ☐ Visa No. _____ Expiry date _____

Signed _____

Name _____

Address _____

Post to: Micro Olympics offer, Database Publications,
68 Chester Road, Hazel Grove, Stockport SK7 5NY.

EU12

If you want to start doing more with your micro than just playing games, this package is your ideal introduction to the four most popular applications for professional computers. All the programs have been designed for simplicity, so even a child can use them. Yet they include advanced features not yet available on programs costing many times as much!

**Finalist for the Home Software
of the Year Award**



**Contains 32 page booklet giving clear,
easy-to-follow instructions on all 4 programs**

Word Processor: Ideal for writing letters and reports. There is a constant display of both time and word count, plus a words-per-minute display to encourage the budding typist! A unique feature is the double-size text option in both edit and printer mode - perfect for young children and people with poor vision.

Database: You use this for storing information, just like an office filing cabinet. Facts you have entered can be quickly retrieved by just keying in a word or part of a word. They can be sorted, replaced, saved for future use or printed out.

Spreadsheet: Enables you to use your micro for home accounts or pocket money records. It creates a display of numbers in rows and columns. Continuous updating is possible, and a changed figure can be instantly reflected throughout the rest of the spreadsheet. Your results can be saved, to be used for future updates, or can be fed into its associated program . .

Graphics: Part of the spreadsheet section, it lets you draw bar charts, pie charts and histograms to give a graphic presentation of your statistics. Helps to give life and colour to the duller figures!

☆ **Word Processor**
☆ **Database**

☆ **Spreadsheet**
☆ **Graphics**

**Now they're
all together -
in ONE simple
package**

Four full-scale
programs for
an incredible
low, low price!

£5.95
cassette

Also available from:

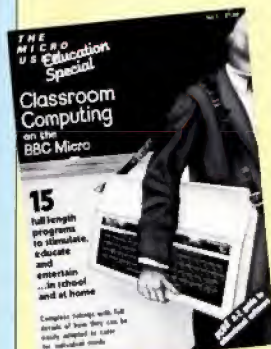
BOOTS COMET Currys Dixons WHSMITH

Greens **REBELLOWS** and other computer stores

Use the special order form on Page 61 - No stamp needed!

Educational Computing on the Electron

24 FULL LENGTH programs in two separate packs, designed to stimulate, educate and entertain – both in school and at home



Volume 1 contains:

Tuadd, Tusub, Tumult: Elementary maths. **Calculator:** Sums at a stroke. **Table Mountain:** Fun tables. **Gottit:** Word guessing for two. **House:** Word, number and colour recognition. **Gallery:** A typing tutor. **Whattnumber:** Strategy number game. **Bridge Breaker:** Hangman with a difference. **Snap:** Letter and number recognition. **Manipulation:** Thought provoking maths game. **Matrices:** Matrix manipulation. **Hidden answers:** The principles of mapping. **Curvefit:** Drawing lines of best fit.

Education Special Volume 1	
Magazine	£1.95
Cassette	£5.95
Cassette and Magazine	£7.00

To satisfy the increasing demand for high quality educational software on the Electron – particularly for the younger age group – two superb packages are now available from *Electron User*.

The Micro User Education Special, Volumes 1 and 2, contain between them 24 full length programs, written to the highest standards, and each picked to combine educational worth with sheer enjoyment.

The 15 programs in Volume 1 range in scope from pre-reading to sixth form maths. Volume 2, with nine programs, covers topics from early reading and simple sums to the rules of punctuation and angle estimation – and there's an excellent introductory database.

All necessary instructions are contained within the programs themselves, but more detailed descriptions can be found in Volumes 1 and 2 of the Micro User Educational Special magazine.

Originally written for the BBC Micro, magazines contain complete listings of all the programs together with advice on how they can be adapted to cater for individual needs.

In most cases the cassettes that come with the magazines have been completely revised so that they run on the Electron without losing anything of their original quality.

SPECIAL OFFER:

BOTH Cassettes and Magazines for £10
A saving of £4.35 Over individually priced items



Volume 2 contains:

Fun Factors: Arcade style factor learning. **Windmill:** Word, number and colour recognition. **Angler:** Angle estimation fun. **Spelldroid:** Learn to spell with our friendly robot. **Tortal:** Teach and test the rules of simple addition. **Discovery:** A strategy based phrase identification game. **Punctuation:** Test and teach the rules of punctuation. **Junior Database:** A comprehensive database for the young learner. **Chinese Takeaway:** Teach and test the rules of simple subtraction.

Education Special Volume 2	
Magazine	£1.50
Cassette	£4.95
Cassette and Magazine	£6.00

Listings

ONLY
£3.75

Save yourself the chore of typing in listings by sending
for our monthly tapes, packed with games, utilities, graphics
and other programs from the pages of *Electron User*.

On the December 1985 tape:

GET SET SANTA Christmas fun collecting presents. **MISSILE ATTACK** Save your cities! **PROGRAM PROBE** Using joysticks. **SPACE COUNT** Counting for youngsters. **CHRISTMAS CARD** Cards and carols for all. **DISC MENU** Disc Menu creator. **NOTEST** Music tutorial. **NOTEBOOK** Bubble sort.

On the November 1985 tape:

KARATE WARRIOR Electrifying combat. **ULA Mode B Mode 7**. **PAINT ROLLER** Colourful arcade action. **DEFUSE** Beware the bombs. **SPRITE PRINT** Machine code graphics utility. **TRAIN** Far from stationarity graphics. **TABLE** **MOUNTAIN** Sums and summits.

On the October 1985 tape:

DUNGEON QUEST An amazing action arcade adventure. **PILOT** Computer assisted learning language. **SAVING ROLLER** Arcade action in the garden. **TRAIN** Animated action. **KALEIDOSCOPE** Colourful graphics action.

On the September 1985 tape:

TEKNOAN 3D Wild West shootout. **PINTCURSOR** Machine code graphics. **SPRITE-ED** Sprite editor. **COMPOSE** Writing music simplified. **REVERSI** Cunning strategy game. **SIMPLEFILE** Save and read data. **BOUNCE BALL** Two player action. **ROTATE** Animation file edit.

On the August 1985 tape:

DIGGA Exciting arcade action. **CONQUEST** The war. **DOODLE THE ASTEROIDS** Fun peep in space among the asteroids. **MICCODE** **GRAPHICS** Sliding points of light! ***FX** The OS explored. **MOVEIT** An intriguing sliding puzzle. **HEXGRAM** An educational game to increase your word power.

On the July 1985 tape:

MANIC MOLE Machine code action at its best. **HIGHER OR LOWER** Guess the card. **TIME BOMB** Carefully collect TNT. **MICCODE** **GRAPHICS** Two demonstrations. **FX1/2** The OS on call. **PIRATE** **MATHS** Sum fun. **NOTEBOOK** Password Generator.

On the June 1985 tape:

QUASIMODO Baffling classic. **DISASSEMBLER** Machine code utility. **ACTIVITIES** Educational fun. **REFLECT** Aggregate aliens. **LEGION** Animation. **DODGE** Race track action. **STRINGALONG** Scrolling fun. **CASTLE** Medieval graphics. **MATHS** Curve angles and an **NOTEBOOK** Trees.

On the May 1985 tape:

SKRAMBLE! Computer arcade action. **SNEEPIN** The logic game. **TEXTWRITER** Screen utility. **LIFE** A cultured classic. **CEORIC**

Educational fun. THREE-D

Outstanding utility. **SPOKES** Fascinating graphics. **MOONBOORT** Heavenly display. **BLAZON** Hermetic devices. **FLOWERS** A Basic bouquet. **NOTEBOOK** Animated animation.

On the April 1985 tape:

SUPER ARCHER Target practice. **BINARY SEARCH** Search data efficiently. **JOYPLUS** Switched joystick routine. **ODD ONE OUT** Educational fun. **POLYNOOM** 3D rotation. **MONEY CRAZY** Arcade action. **STARCHART** The night sky. **FORTUNE TELLER** Horoscope. **COLLISION DETECTION** Alien encounters. **HELLO** Guessing game. **NOTEBOOK** Hello to assembly.

On the March 1985 tape:

MR. FREEZE Ice cube arcade action. **SCREENDUMP** Two procedures for printer dumps. **FILLER** The machine code fill routine. **FRED'S WORD GAME** Educational fun. **BIG LETTERS** Large text utility. **PERCY** Beat the burning fun. **ANIMATION** Two example programs. **PIGS** Fungus bacon. **NOTEBOOK** Display formatting.

On the February 1985 tape:

CRAAL The moustache machine. **BOUNCY** Addictively annoying action. **PAIRS** Can you remember the cards? **BASE** A Binary-to-decimal conversion utility. **CATCHER** Collect the eggs before they break. **CLOCK** Time-keeping utility. **NACER** Grand Prix action. **NOTEBOOK** Graphics windows. **TRIG** All the right angles.

On the January 1985 tape:

SPACE BATTLE Destroy the deadly descending aliens! **NEW YEAR** A sound and graphics greeting. **ESCAPE FROM SCARGOV** Minefield action. **PIE CHART** Statistics made simpler. **CLAYPIGION** An Electron bimboosh. **ORGAN** Music headset please! **NOTEBOOK** An original program. **RANDOM NUMBERS** Or not so random! **SNAKES** Reptilian arcade action. **CHANCE** Race Beat rival mice.

On the December 1984 tape:

CHRISTMAS BOX Adjust the presents logically. **SILLY SANTA** Sort out the middle. **SNAP** Match the Xmas pictures. **RECOVERY** The Bad Program message tamed. **CARD** Interrupt driven magic. **AUTODATA** A program that grows and grows. **NOTEBOOK** Simple string handling.

On the November 1984 tape:

STAR FIGHTER Anti-alien missions. **SCROLLER** Wrap around machine code. **URBAN SPRAWL** Environmental action game. **SPELL** Alphabetic education. **JUMPER** Level headed action. **CAISAR** Code breaking brother. **KEYBOARD** Typing game.

On the October 1984 tape:

BREKFREE Classic arcade action. **ALPHASWAP** A logic game to strain your brain. **SOUND GENERATOR** Tune the Electron's sound channels.

MULTICARACTER

Generator. Computer characters made simple. **RIGEL** 5 Out of this world graphics. **MAYDAY** Help with your more code. **NOTEBOOK** Palindromes and string handling.

On the September 1984 tape:

HAUNTED HOUSE Haunted action in the spirit world. **SPLASH** A logic game for non-swimmers. **SHORT SHOWNS** How some algorithms work. **SHORT TIME** The time they

take. CLASSROOM INVADERS

Multicoloured characters go to school. **SAILOR** Natural action. **MATHS TEST** Try out your mental powers.

On the August 1984 tape:

SANDCASTLE The Electron seaside outing. **KNOCKOUT** Bouncing balls batter brick walls. **PARACHUTE** Keep the skydivers dry. **LETTERS** Large letters for your screen. **SUPER-SPELL** Test your spelling on your bike. **Fatal hour** comes to you. **Electron SCROLLER** Slowed strings slide sideways.

On the July 1984 tape:

GOLF A day on the links with your Electron. **SOLOITAIRE** The classic solo logic game. **TALL LETTERS** Large characters made simple. **BANK ACCOUNT** Keep track of money. **CHARLIST** 3D graphics. **FORMULAE** Areas, volumes and angles.

On the June 1984 tape:

MONEY MAZE Avoid the ghosts to get the cash. **CODE BREAKER** A mathematician is needed to crack the code. **ALIEN** See little green man - the Electron way! **SETUP** Colour (medium). **CRYSTALS** Beautiful graphics. **LASER SHOOT** Out an invader. **SMILER** Have a nice day!

On the May 1984 tape:

NEWSPAPER The speed of car control. **SPACE PODS** More alien to annihilate. **CODER** Secret messages. **SPIN THE WHEEL** **MACHINE** Spin the wheel to win. **CHASER** Avoid your opponent to survive. **TIC-TAC-TOE** Electron noughts and crosses. **ELECTRON DRAUGHTSMAN** Create and save Electron masterpieces.

On the April 1984 tape:

SPACEHIKE A hopping arcade action. **FRIZEE** Electron wallpaper. **PELICAN** Cross roads safely. **CHESSMASTER** Clock your moves. **ASTERIOD** Space is a minefield. **LIMERICK** Automatic rhymes. **ROMAN** Numbers in the ancient way. **BUNNYBLITZ** The Easter program. **DOGGUCK** The classic logic game.

On the March 1984 tape:

CHICKEN Let dangerous drivers test your nerve. **COFFEE** A tantalizing word game from Down Under. **PARKY'S PERIL** Parky's lost in an invisible maze.

On the February 1984 tape:

REACTION TIME How fast are you? **BRAINTEASER** A puzzling program. **COUNTER** Mental arithmetic can be fun! **PAPER, SCISSORS, STONE** Out-guess your Electron. **CHARACTER GENERATOR** Create shapes with this utility.

On the January 1984 tape:

NUMBER BALANCE Test your sense of mental arithmetic. **CALCULATOR** Make your Electron a calculator. **DOODLE** Multi-coloured patterns galore. **TOWERS OF HANOI** The age old puzzle. **LUNAR LANDER** Test your skill as an astronaut. **POSITIONING** A version of the old arcade favourite.

On the introductory tape:

ANALOG Program with 15 combined letters. **DOODLE** Multicoloured graphics. **EUROMAP** Test your memory. **NOTEBOOK** Electron graphics run riot. **CAPITALS** New upper case letters. **ROCK, PAPER, SCISSORS** Three fireworks programs. **BOMBER** Drop the bombs before you crash. **DUCK** Simple animation. **METEORS** Collisions in space.

See order form on Page 61

All
programs
classroom
tested and
educationally
approved

10
programs
on each
cassette

FUN SCHOOL!

Early
learning -
the easy way
on the BBC
Micro and
Electron

Help with reading:

From simple shapes
and letters to
spelling and
anagrams

3 cassettes
for 3 age groups

- Under-5's
- Ages 5-8
- Ages 8-12

Help with maths:

From number
recognition and
counting to simple
sums and games
of logic

Only
£4.95
each
cassette!

Use the special order form
on Page 61. No stamp needed.

Offer repeated due to
overwhelming demand!



Existing subscribers can renew early
to take advantage of this offer.

Exclusive offer to subscribers!

It's been given rave reviews
and everyone who's played it
says it's one of the most
gripping arcade games
they've ever experienced. It's
already taken America by
storm. Now it's doing the
same in Britain. It's called . .

BEACH-HEAD

— and it's a game no
Electron owner will want to
be without! It's in the shops
now and costs **£8.95** on
cassette. But we'll send it to
you for just **£3** if you take
out a subscription on the
form opposite or send in
your renewal notice.

(Not available without
subscription or renewal.)

**Complete
YOUR
electron
collection
— send
now for
the back
issues you
may have
missed!**

Copies of all
issues from
February 1984
are still available
at £1.50 each



Complete
set of our first
four introductory
issues for only
£2.00

All prices include postage, packing and VAT

Overseas orders sent exclusively by Air Mail

Valid to December 31

Please enter number required in box £ p

**Electron
User
tapes**

26 introductory programs	3032	
Lunar Lander	Feb 1984	3033
Chicken	Mar 1984	3034
Spacehike	April 1984	3035
Rally Driver	May 1984	3036
Money Maze	June 1984	3037
Golf	July 1984	3038
Castles of Sand	Aug 1984	3039
Haunted House	Sept 1984	3040
Breakfree	Oct 1984	3041
Star Fighter	Nov 1984	3042
Christmas Box	Dec 1984	3043
Space Battle	Jan 1985	3044
The Kingdom of Craal	Feb 1985	3045
Mr Freeze	Mar 1985	3046
Super Archer	April 1985	3047
Skramble	May 1985	3048
Quasimodo	June 1985	3049
Manic Mole	July 1985	3050
Digger	Aug 1985	3051
Tex'n' Dan	Sept 1985	3052
Dungeon Quest	Oct 1985	3053
Karate Warrior	Nov 1985	3054
Get Set Sante	Dec 1985	3055

**Electron
User annual
subscription**

UK & Eire (Sterling only) £12	3001	
Europe £20	3003	
Overseas £36	3004	

Add £3 to your subscription and receive your cassette of Beach Head (worth £8.95).
Only available if accompanied by subscription order/renewal.

Commence with _____ Issue _____

**Cassette tape
annual subscription**

£35 UK	3005	
£45 Europe/Overseas		

Commence with _____

>>>

Electron User back issues

£1.50 UK	Set of 4 introductory issues £2	3006	
£1.75 Europe	February 1984	3007	
£2.25 Overseas	March 1984	3008	
	April 1984	3009	
	May 1984	3010	
	June 1984	3011	
	July 1984	3012	
	August 1984	3013	
	September 1984	3014	
	October 1984	3015	
	November 1984	3016	
	December 1984	3017	
	January 1985	3018	
	February 1985	3019	
	March 1985	3020	
	April 1985	3021	
	May 1985	3022	
	June 1985	3023	
	July 1985	3024	
	August 1985	3025	
	September 1985	3026	
	October 1985	3027	
	November 1985	3028	

Fun School tape

Under-5s	3080	
Ages 5-8	3081	
Ages 8-12	3082	

Magic Sword cassette

£8.95 UK	3063	
£9.95 Europe/Overseas		

Electron Plus 1

£39.95 UK	3084	
-----------	------	--

**Electron Workstation
Package**

£69.95 UK	3085	
-----------	------	--

**Electron Data Manager
Package**

£149.95 UK	3086	
------------	------	--

UK only

TOTAL

>>>

Education Specials**Classroom Computing on the Electron****Vol. 1**

Electron Cassette	£5.95	3070	
Micro User Education Special No. 1	£1.95	2210	
Both the above	£7.00	3071	

Vol. 2

Electron Cassette	£4.95	3076	
Micro User Education Special No. 2	£1.50	2220	
Both the above	£6.00	3077	
Both cassettes and magazines	£10.00	3078	

Europe/Overseas - add £1 per product ordered

**Mini
Office**

£5.95 UK	3062	
£6.95 Europe/Overseas		

**Classic Arcade
Games**

£5.95 UK	3064	
£6.95 Overseas		

Micro Olympics

£5.95 UK	3061	
£6.95 Europe/Overseas		

**Getting
Started in
BBC Basic**

£5.95 UK	2289	
£7.45 Europe		
£8.45 Overseas		

Communications Pack

£145 UK	3083	
£152 Overseas		

>>>

Dust cover

£3.95 UK	3058	
£4.95 Europe/Overseas		

Binder

£3.95 UK	3059	
£6.95 Europe/Overseas		

Now please complete panels overleaf TOTAL

**Keep your collection
of Electron User
complete with these
handsome binders**

Bound in attractive red pvc with the Electron User logo in gold blocking on the spine, this binder will hold 12 magazines firmly secured in place by metal rods. **£3.95**

**Your Electron
needs protecting**

Protect your Electron with our luxury dust cover made of soft pliable water-resistant vinyl, bound with strong cotton and decorated with the Electron User logo. **£3.95**

You can also order by phone

061-480 0171

Payment: please indicate method (✓)

☐ Access/Mastercharge/Eurocard

☐ Barclaycard/Visa

☐ Cheque/PO made payable
to Database Publications Ltd.

BLOCK CAPITALS PLEASE

Name _____

Address _____

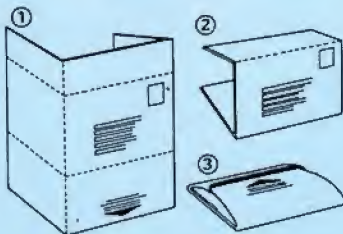
_____ Post Code _____

Signed _____

Please allow 28 days for delivery.

Electron User
FREEPOST,
Europa House,
68 Chester Road,
Hazel Grove,
Stockport SK7 5NY.

NO
POSTAGE
NEEDED
IF POSTED IN UK



TUCK INTO FLAP

Don't forget to provide: Your address, your cheque/credit card No.

ELECTRON SOFTWARE BARGAINS FROM POTTER PROGRAMS 'THE HOTTER PROGRAMS'

Send S.A.E. for our list of selected, cut price software for the Electron. All titles guaranteed original and returned by first class mail.

Also available direct from Potter Programs, our fiendish adventure games:

THE STAFF OF LAW 32K

Can you track down the Staff of Law and master its potent Earth Power to defeat the Despoiser?

"Extremely fiendish... well worth buying" Electron User. **PRICE: £2.95**

SUPER AGENT FLINT 32K

The dreaded T.E.R.D. (Terrorist for England's Ruin and Destruction) organisation has reared its ugly head. Only you as Super Agent Flint can capture their interstellar rocket and secret plans.

"Quite fast and fun to play. At the price I must recommend it" Electron User. **PRICE: £2.95**

GALADRIEL IN DISTRESS 32K

The Princess Galadriel has been abducted and an evil spell holds her prisoner. You must seek aid from the Wise Loremaster to release her and save yourself from the wrath of King Theoden.

PRICE: £2.95

All adventures with full save game facility for the Electron or BBC B. Price £2.95 each OR SPECIAL OFFER: All three games for £5.95. Please add 50p P & P per order (£1 for orders outside U.K.). Also hint sheets available 20p each game.

Send cheque or P.O. with your order to:

Dept E6, Potter Programs, 7 Warren Close, Sandhurst, Camberley Surrey, GU17 8JR. Tel: (0252 877608).

WANTED: Top quality programs for the Electron/BBC B in machine code or Basic. Send us a copy of your program on cassette for evaluation. Generous royalties paid if accepted. Absolute confidentiality is guaranteed.

ELECTRASOFT ANGLING

THE GAME YOU'LL GET HOOKED ON!!

WHETHER YOU ARE AN ANGLER OR NOT YOU WILL ENJOY THIS
NEW EXCITING GAME FOR THE ELECTRON

Try to catch the big fish as they swim past in high resolution full colour graphics, but beware of the vicious shoal fish which will snatch your bait if you're not careful!

Points are awarded according to the size of fish caught and an assessment of your skill rating is given at the end of each game.

Price £5.99

Send Cheques or Postal Orders to:

**D. TAYLOR
18 HAYDON ROAD, BRIGHTON HILL, BASINGSTOKE,
HANTS RG22 4JG**

**FREE
RACING
ANALYSER**

**ELECTRON
POOLS
PREDICTOR**

**14,000
MATCH
DATABASE**

After three successful seasons of pools prediction on the BBC micro, we are pleased to announce the Electron version of our renowned Pools Predictor program. Complete with powerful form analysis, a massive database and much more. And making this an outstanding punter's package, there is a free Racing Analyser Program to let you analyse any horse race using the racecard from your daily paper. Now beat that for value!

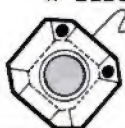
£8.99

**MAYDAY
SOFTWARE**

**181 Portland Crescent
Stanmore, Middx. HA7 1LR**

★ NEW ★ NEW ★ NEW

★ ELECTRON TRACKBALL



Add a new dimension and mouse-like control to your Electron graphics, art, drawings, CAD, X-Y movements and games. Interfaces to analogue port on Plus 1.

£24.90 Incl. VAT

★ MOUSEPAINT SOFTWARE

Superb icon driven drawing package for both Trackball and Tablet. Cassette save and load, outline or solid circles, ellipses, rubber rectangles, text, corrected dotted or solid lines, rubber band lines, colour choice, scribble, infinite paint brushes, hatch or plain fill in 4 out of 8 colours.

£11.50 Incl. VAT

★ TARANTULA TOUCH TABLET



The most natural way for a designer or artist to conveniently draw or trace into an Electron with an exciting electronic pad and stylus. Includes a free copy of the Mousepaint paint package.

£79.90 Incl. VAT

W

WIGMORE HOUSE LTD
32 Saville Row,
London W1X 1AG.

01-734 0173

01-734 8826

P&P = £2.00

WHOOPSY

Mummy wants baby to go to bed but baby has other ideas... and is very resourceful!

- HILARIOUS FAMILY ARCADE GAME
- NINE LEVELS AND 2 SUPER LEVELS
- KEYBOARD/JOYSTICK OPTIONS
- IDEAL CHRISTMAS NOVELTY GAME
- WITH FREE NURSERY RHYMES
- HIGH-SCORE TABLE

**REMEMBER: BEWARE THE
PATROLLING POTTIES!**

FOR BBC/ELECTRON £6.95 (Tape)

£8.95 (Disc)

Available mail order only through our Access/Visa hotline (01-514 4871) or by post.



To: **SHARDS SOFTWARE**

Freeport (no stamp required) Ilford, Essex IG1 2BR.

Name

Address

.....

..... Credit Card No.

Please send me:

Whoopsy (tape) for BBC/Electron. I enclose £6.95 ☐

Whoopsy (disc) for BBC. I enclose £8.95 ☐

Details of your BBC/Electron products ☐

PROGRAM NOTES

- 10,20** Give a name to the program and also describe it all too accurately.
- 30** This initialises the numeric variable *count*, which holds the number of items to be sorted. If you want to change the number of items, all you have to do is to insert them into the data statement of line 190 and alter *count*. The string variable *holding\$* is used later in the program to store a temporary value. It's a scratchpad variable.
- 40** The DIM sets aside space for a string array *record\$(1)* consisting of *count+1* elements.
- 50-70** Form a FOR ... NEXT loop which READs in values from line 190 and stores them in the array elements *record\$(1)* to *record\$(10)*.
- 80-140** Make up the bubble sort which consists of two nested FOR ... NEXT loops. These compare each successive pair of *record\$(i)* and, if the contents of one is larger than the other, swaps them. Eventually, as the comparisons go on, the largest element of the array "bubbles" to the stored in *record\$(10)*. Then the process starts again on the nine remaining unsorted *record\$(i)*.
- 80,140** Define the outer loop. This has the control variable *span* which ranges from *count-1* to 1, descending in steps of 1. As *span* gets smaller, so the range of the *record\$(i)* that are to be compared, pair by pair, gets smaller.
- 90** *noswap* is a flag that is initially set to TRUE. The state of the flag is effected by what goes on in the inner loop.
- 100-120** Make up the inner loop, the one that does the swapping if it becomes necessary. The control variable *comparison* goes from 1 to the current value of *span*.
- 110** Compares *record\$(comparison)* with the next element *record\$(comparison+1)*. If they are out of order they are swapped, using *holding\$* as a temporary store. If a swap has occurred then *noswap* is made FALSE.
- 120** By the time the inner loop is completed each pair of elements in the *span* being considered will have been compared and, if necessary, swapped. The largest element will be in the rightmost position. Try working through the program on paper using *count=4* and trying to sort *d,a,b,c*, and you'll see what happens.
- 130** If the inner loop has compared every element in a particular *span* and they are all in order *noswap* will still be true. There's no point in further sorting so *span* is set to 1, terminating the outer loop.
- 140** By the time the outer loop is finished every element in the array will be in its correct position.
- 150-170** Print out the rearranged array.
- 190** Holds the items to be sorted.

Notebook

THIS month's notebook program is a bubble sort routine which takes an unordered list and puts them into order. In this case it's a set of letters that want to go into alphabetical order but it could be numbers. Try it and see.

```

10 REM BUBBLE SORT
20 REM SLOW BUT SURE
30 count=10:holding$=""
40 DIM record$(count)
50 FOR loop=1 TO count
60 READ record$(loop)
70 NEXT loop
80 span=count-1 TO 1
STEP -1
90 noswap=TRUE
100 FOR comparison=1 TO
span
110 IF record$(comparison)
>record$(comparison+1) THEN
N holding$=record$(comparison):rec
ord$(comparison)=record$(
comparison+1):record$(
comparison+1)=holding$:nosw
ap=FALSE
120 NEXT comparison
130 IF noswap=TRUE THEN
span=1
140 NEXT span
150 FOR loop=1 TO count
160 PRINT record$(loop);
";
170 NEXT loop
180 PRINT
190 DATA "d,a,b,c,f,h,b,
a,a

```

Initialises
variables
Reads data
into arrays

Flag

Compares adjacent
items and swaps
them if necessary

Ends outer loop if
no swap has occurred
in last inner loop

Prints out
sorted list

Items to
be sorted

Add the following lines and, when you press the space bar, you'll see how the sort progresses

```

5 span=0
25 MODE 1
33 mark=count
:comparison=0
71 PROCprint
73 wait$=GET$
75 PRINT
115 COLOUR span MOD 2 +1
117 PROCprint
121 wait$=GET$
123 PRINT
141 COLOUR 1
:PROCprint
142 END
143 DEFPROCprint
161 IF loop=mark
AND comparison=span
THEN COLOUR 3:mark=mark-1
185 ENDPROC

```

Trevor Roberts

A SPECTACULAR ARCADE-STYLE GAME

DeathStar



THE FIRST ZONE.



THE DEATHSTAR BEING BOMBED.



THE WARRIOR ZONE.



CRYSTALS BEING EMITTED FROM A PLANETOID.

DEATHSTAR

is a fast arcade-style space game with stunning graphics and addictive action. Your "Intelligent" opponents, the Workers and Warriors, each have several different tasks to perform: mining the Crystals held deep within the Planetoids, constructing the mighty Deathstar from these Crystals, guarding the Deathstar, attacking your ship, and sacrificially intercepting the Starbombs, with some jobs having higher priorities than others. You must amass a large supply of Starbombs by shooting the Planetoids and collecting the Crystals as they splinter off the Planetoids and hurtle through space. Once the Deathstar has been completed, it comes in rapid pursuit and can only be repulsed by swift and accurate use of the Starbombs. If you successfully destroy the Deathstar, you progress on to the Worker Zone, the Warrior Zone, the Planetoid Zone and the Void Zone (in which there are very few Planetoids present), with a bonus screen between each zone. A superb game, destined to become another Superior classic.

SPEECH COMPATIBLE

If you have an Acorn Speech Synthesiser fitted, you will hear spoken phrases: such as "BEWARE, I AM COMPLETE" when the Workers have finished building the Deathstar.

CASSETTE VERSION — £9.95

Due to phenomenal demand, Deathstar is now available on disc for the BBC micro in a high quality vinyl disc wallet with colour packaging.

BBC DISC VERSION — £11.95

WE PAY UP TO 20% ROYALTIES FOR HIGH QUALITY BBC & ELECTRON PROGRAMS



SUPERIOR SOFTWARE LTD.

Dept. RU10, Regent House,
Skinner Lane, Leeds 7
Tel: 0532 459453.



OUR GUARANTEE

- All mail orders are despatched within 24 hours by first class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.



Micro Messages

Keep it clean - keep it going

MAY I make a quick rejoinder to your reply to my letter about dirty heads (October Electron User).

I have been using audio tape recorders for many years, from a reel-to-reel Ferrograph to modern Sony cassette type (that should show my age!).

Only once have I had a tape head out of alignment - that was after a recorder had fallen 15ft from the branch of a tree.

Since computer equipment is not usually subjected to such robust treatment, I really cannot believe tape heads frequently cause trouble from this problem.

If a tape head were completely filmed over with dirty grease it would indeed cause problems with all tapes.

However, I find the greater problem arises from small particles which shift around with the passage of the tape causing intermittent faults.

Equally, a long tape not only needs a pretty healthy drive - usually found only on audio cassette units - but can itself become distorted with frequent use.

As a simple analyst I have acquired an undeserved reputation as a computer doctor because when I am told "the computer is down", I clean the disc heads and all is well again (saves calling the serviceman out).

Exactly the same applies to cassette heads. - **R.H. Hill, Woodford Green.**

● Tape head alignment is often different on different tape recorders. So, while a tape may load perfectly on the tape recorder it was saved on, it may not load on a totally different one.

Golden outlook

READING through the October issue of your wonderful magazine I couldn't believe my eye's when I saw Beach-Head by US Gold out now for the Electron.

Do you know whether US

Gold are making any other fabulous games for the Electron?

Also in the October Electron User I saw the article on the Voxbox speech synthesiser. Is it worth the money? - **Jonathon Timms, Billingshurst.**

● We'll be reviewing Voxbox as soon as possible, and you'll be able to make your own judgement.

No doubt US Gold will follow up Beach-Head with another superb game as they seem to have the talent for coming up with original and exciting themes.

Trapping the fiend

I'VE just read your review of Alligator's Bumper Bundle in the September Electron User. I've got the cassette and my son and I have had a lot of fun with the games.

About Mell Moll: the fiend, as you call him, is a mechanical robot who can't be killed, he can only be bopped on the head by a skull to push him down one blockspace.

In the early levels you can block his path by strategic placing of skulls.

If you're lucky you can sometimes trap him in the skeleton chamber, after you've got the crystals, by sealing the exit with a skull.

However, since he's somewhat erratic, you can't always plan very well.

It's an interesting game with a fair bit of strategy, lots of luck, and some skill in getting up the difficult entrance to your own side.

My nine-year-old is far better than I am at playing, having reached level 9 and a

score in the 54,000 range! My best is approximately 42,500, level 4. - **Alice Morland, Glasgow.**

● Thanks a lot, Alice. We can't wait to put your tips into action.

Memory routine

WHILE trying to run programs such as Starfighter and Manic Mole I have been having some problems with memory.

Could this be due to the connection to the disc system of my BBC B and if so could you tell me how to overcome this problem? - **Peter Maher, London NW10.**

● Both these programs will run on the BBC Micro. They do need downloading to &E00 though.

Plus 3 owners will experience the same problem. The routine you need was in Micro Messages last August.

Revs for the Electron?

I HAVE just seen the new Acornsoft game, Revs, for the BBC Micro. The inevitable question is, "Will it be available for the Electron in the near future?"

I have always liked racing games but this one seems to stand out from the rest.

The graphics are excellent and from the reviews I have seen it looks another masterpiece from Acornsoft which would be greatly appreciated by Electron owners.

I would also like to know when the Elite replacement will be available as I think some things in the game need

to be polished up a little.

I think I have a problem with Eddie Kidd's Jump Challenge. When the game starts you are on a BMX which has no problems, but once you get on to the motorbike a loud buzz starts, which wasn't there when it was new.

Could you tell me if this is meant to happen or not. - **Martin Egdeall, Hull.**

● Revs is unlikely to be converted for the Electron - we'd love to be proved wrong though.

What's wrong with Elite, it's one of the best games around?

We're not sure what is wrong with your motorbike. It sounds like the exhaust is blowing a bit.

Helping hand

WHEN I first bought my Electron I thought I had made a mistake as there didn't seem to be much software and computer magazines above all, no help.

The I bought Electron User (Acorn User seemed to be all BBC B, no Electron) and what a find! It gives more help, better listings and so on than any other magazine.

In Micro Messages August 1985, David Molyneux's Overdrive routine worked beautifully. I got well over 100,000 (after 100,000 the score resets to 0).

Will Manic Miner ever be made for the Electron? The same goes for Underworld and Sabre Wulf from Ultimate.

I want to know as my friends with Spectrums want to see it on the Electron.

Do you recommend the

From Page 67

Plus 1 Interface or the First Byte Joystick Interface? We can't make up our minds. — Paul and Stephen Moore, Luton.

PS: Also, which is a good, but cheap printer?

● Manic Miner hasn't been converted for the Electron, but there are plenty of similar games. Take a look at Bagger from Alligator.

Both interfaces are good, and both work with some of the games, but neither with them all.

Do you need the printer port and ROM sockets? If you do, then go for the Plus 1. Otherwise there's not much between them.

The only low-cost printers we've used are Brother. The quality is reasonable and they're good value for money.

Problem from space

ALTHOUGH a novice with the Electron, having had mine for just over two months, I must agree with Marilyn Rodger (Micro Messages, September) that there is something wrong with the listing of the game Higher or Lower in the July

WHAT would you like to see in future issues of Electron User?

What tips have you picked up that could help other readers?

Now's here is your opportunity to share your experiences.

Remember that these are the pages that you write yourselves. So

tear yourself away from your Electron keyboard and drop us a line. And please, if you want a reply, enclose an SAE.

The address is:

**Micro Messages
Electron User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY.**

issue. I have checked the copy of the game three times and there are no errors, but it stands it will not run in Mode 1.

After listing it and finding it wouldn't work, I thought it must have been an error on my part, but I tried changing to Mode 5 on line 40 after reading Marilyn's letter, and found that the game now runs OK except for the distorted cards.

Surely this points to the original mode being wrong, but how does one now get the cards back to normal?

Before you ask, I don't have a Plus 3 or any other additional hardware attached to my Electron, so why am I running out of memory? — Larry Horsfield, London SE7.

● It sounds as if you've added

a few extra spaces to your listing. (We can assure you ours is accurate.)

The memory is rather tight with this program, so spacing the text out will cause a "No room" error or "Bad mode".

Trouble with the police...

AS a couple of budding stuntmen, my brother and I are keen on Dare Devil Denis (Visions Software).

We would recommend this game to anyone, but we are left wondering if it is possible to get past the policeman and the tree in the third line of board 1 in level F (Ace).

We have never managed it and would like to hear from

anyone who has. — S. Whigham, Prestwick.

● Can anyone help with Dare Devil Denis? We're too cowardly to try it...

Printer program

IN the October issue of Electron User in the Software Surgery section Roland Waddilove reviews the View ROM cartridge from Acomsoft, and states that there is a printer driver program available.

We have been trying for some time to get such a program, and would be very grateful if you can let me know its source.

We have an Olivetti ink jet printer, and would like to know if the above-mentioned program will handle all the excellent capabilities of this printer.

Incidentally, we have a View cartridge for our Electron, and agree with all Roland Waddilove says.

While we also agree with him that the printer program should have been included in the cartridge, we have to make whatever other uses we can of the available data. — Basil Crowhurst, Croydon.

● Acomsoft has produced a View printer driver package for

More educational software

THANK you very much for the list of educational programs in the recent issue of Electron User.

I've sent off for details of many of those listed and now have the problem of deciding what to buy, whereas before I had to buy whatever I could find.

I have, however, in my search for educational programs found several which you have not listed and therefore enclose a list for you so that a possible supplement could be published, as no doubt others will have come across other programs which you did not include in your guide.

I have enjoyed the programs you publish, though my typing needs great

improvement. — Joan Langley, Twickenham.

Collins Software, Collins Educational, Freepost, Glasgow G4 0YX. Tel: 041-772 3200.

Paddington's Shopping Mix Up. Paddington and the disappearing ink.

Paddington's problem picture. Paddington's early visit. What's the time? Know your tables. First numbers. Datalog.

Hill MacGibbon Ltd, St Bartholomew House, 92 Fleet Street, London EC47 1BH. Tel: 01-353 6482.

Pan Course Tutors — Biology, Chemistry, Maths, Physics, Economics, French.

Willow Software, The Willows, Wington Lane, Congresbury, Bristol BS19 5BQ. Tel: 0934 834056.

Early Words. Early Maths.

Highlight Software, 36 Sherbourne Close, Barry, South Glamorgan CF6 5AQ. Tel: 0446 745482.

Reading Pack 1, 2, 3, 4. Bert Book. Entertaining English.

Ampalsoft, 31 Woodbridge Road, Darby Green, Blackwater, Camberley, Surrey. Tel: 0252 876677.

Fun Sums. Sum takeaway. Adder sums. Sums times. Sum measure. Measure sum more. Fun words.

Gemini Marketing Limited, Unit 21, Concorde Road, Dinan Way Trading Estate, Exmouth, Devon EX8 4RS. Tel: 0395 265185. Alphabet Fun. Edward Bear Tells the Time. Felicity Farm Girl. Counting Fun. Pirate Pedro.

Micro-Aid, 25 Fore Street, Prazz, Camborne, Cornwall TR14 0JX. Tel: 0209 831274.

Distances. Flags.

Tuxsoft Cooperative Ltd, PO Box 1, Tuxford, Newark, Notts. NG22 0JX.

What's a Norman Number Man? What's the Temperature? with the Ghost Game. Pack B — Number Check/Speed Arithmetic with Number Catch. Pack C — Tables Tester with Bonus Shoot Out/Tables Square.

The following apparently produce programs for the Electron, though I've not received catalogues yet:

Tutorial Software, Dept. M1E, Wirral L61 1AB.

Chaddington Software, 14 Selkirk Close, Worthing BN13 1PK.

Micro Jan Software, 81 Squirrels Heath Road, Harold Wood, Essex RM3 0LR.

the BBC Micro. As View is virtually identical on both micros it seems likely that that printer drivers work also. Has anyone tried them?

Alive and kicking

I HAVE owned an Electron for about 18 months and have waited patiently for the glut of Electron software.

Sadly it never materialised. Oh sure we have had classics like Elite, Micro Olympics and Cylon Attack, but the Electron has never had a solid support of all types of software.

I have seen the slow increase of software available for the Electron in the shops, but now, alarmingly, there has been a sudden famine.

It annoys me that the shop which eagerly sold an Electron to me (Granada) haven't the decency to support the machine with software.

It used to, but a few weeks ago I noticed that no new games had appeared on the shelf.

When I asked the assistant why, she told me that because of dwindling interest in games for my machine they would not stock any more software. Other shops are doing the same.

Are all my future purchases going to be by mail order? If so, how long will it be before that oasis dries up?

Anyway less doom and gloom, and a few tips for Elite.

When you have shot an opposing craft, if he has launched an escape capsule pick it up with your fuel scoops and you will have gained one ton of slaves.

Also, has any one else ever found a planet that sells alien items? I am in Galaxy 7 and have never found a planet which sells these items.

I have presently 253,987.1 cr. and have a combat rating of Deadly.

I have watched Micro Messages grow from one page to several pages. It's my favourite part of the mag, along with Electron News at the front. — A.P. Larsen, Runcorn.

PS: Thank Merlin for all his tips for TKV but I am no closer to getting anywhere in it. I cannot get into the cave, I go down

I RECENTLY acquired a Slogger Rombox for my Electron. In the accompanying literature there is mention of plugging in extra RAM.

Could this extra RAM be used for programming or is it only pageable memory?

If the latter, would it be possible to use this memory for absorbing some, or preferably all, of the screen's needs?

That is, could the 20k or memory used by the screen in Modes 0, 1, 2 be shunted into this extra RAM leaving more

programmable memory free for user use?

I have a second problem which I hope someone may be able to help me with.

I have a copy of the word processor View, and would like to be able to incorporate the Greek alphabet into files.

This is not difficult in itself, but I cannot obtain hard copies of these files, as the printers available to me steadfastly refuse to acknowledge the presence of the graphics.

I can obtain access to two different Epson printers, the

RX80 and an MX80. Suggestions would be gratefully received. — K.V. Kirk, Reading.

● The Slogger Rombox will accept 8k or 16k RAM. Unfortunately this cannot be used for Basic programs or for the screen memory.

It can be used for ROM software though. There will be an article shortly demonstrating the use of sideways RAM in the Slogger Rombox and ACP's RAM cartridge.

Can any readers help with the printer problem?

the grate only to be thrown into a dungeon with a guard outside.

Maybe I am just not an adventurer. I bet you are sick of hearing about Twin Valley.

● The Electron is far from dead. Recent price reductions make the micro an excellent bargain.

We would expect to see an increase in sales, and a large increase in the number of enthusiasts.

There has been a mini flood of software recently, with several new games coming out in time for Christmas. See this month's Software Surgery for details.

Drive choice

I AM thinking of buying a disc drive but do not know whether to buy the Plus 3 or the Cumana 5½ in system.

We have Cumana drives at school so I would be able to use school software at home. But if Acorn bring games out on disc it will be for the Plus 3. — M. Bailey, Leyton.

● Since your prime concern seems to be compatibility, you would probably be better off with the Cumana disc system. This would allow you to transfer unprotected software from school to home and vice-versa.

However, as you'll see from the other pages of our magazine, the Plus 3 is being offered at a very competitive

price and is, of course, the official disc upgrade.

Interface tips

I HAVE a Powersoft joystick interface and was terribly disappointed when I found that Elite, Acornsoft's classic, was not compatible with it.

Since then I have bought many games and have found that Gauntlet and Ghouls also do not work with my interface.

This time I could not sit back. I changed the programs so that the two games work.

With Ghouls you must load the first part of the program and when the title page appears you must Break it and then type OLD and LIST it.

Now type:

LIST 4780

Then delete the whole line by typing:

4780

Now type in "JOY and put in the keys (method 1). Then instead of typing CHAIN"" type:

RUN

Now let it run on and load in. Your joystick will work. For Gauntlet the procedure is roughly the same except before loading type:

00PT1,2
LOAD "GAUNTLET"

As soon as it loads you will get

the prompt sign>... Type LIST then:

LIST 4780

Delete this line by typing:

4780

Now "JOY, use method {1} and instead of typing CHAIN"" type RUN. It gave me great satisfaction when my joystick worked — Robert Sloan, Chigwell.

● Thanks for the tips Robert.

Line lost

I RECEIVED the November issue of Electron User last week and was very eager to enter the Sprite program on page 18.

However when I got to line 170 I found that the first half of it was missing.

I have typed in the rest of the program so if you would be kind enough to furnish me with the contents of this line I would be most grateful.

Before I go, I must say that I typed out your Karate game and was very pleasantly surprised with the results as was my son!

Terrific magazine, keep up the good work. — R.A.H. Barker, Edgware.

170\$ordch="1210 AND 0FFFF
10\$byte="120A AND 0FFFF

● Sorry about line 170, seen in its full glory above, which apparently dropped off the page. We'll use stronger glue next time!

If you **already own** the popular games of "CHUCKIE EGG", "KILLER GORILLA" or "MONSTERS" then our **UPGRADES:**

"CHUCKEE" will provide 3 Speeds, 8 New Screens, Variable Extended Jump and Select Start Level (1-41).

DESIGN YOUR OWN SCREENS!!!

"KILLA" will provide up to 15 Levels of Play, Variable Extended Jump, Extra Lives, Practice Modes and Pause.

"MONSTAS" will provide 4 Skill Levels Variable Extended Jump, Conveyor Belt Effects, User Defined Keys, Configurable Monsters Extra Lives and Pause.

All programs available for BBC or Electron. **State Machine, £3.25** each, 2 or 3 on one cassette **£5.00 or £7.00** by return post first class.

BITTWIDDLERS

Dept. EU12, 158 Church End, Harlow, Essex CM19 5PF

* & # are trademarks of A&F Software and Acornsoft

AT LAST!

THE ANSWER TO FINDING GOOD QUALITY SOFTWARE FOR YOUR BBC/ELECTRON



MEMBERS RECEIVE:

- * Discount prices on all Tapes & Discs
- * Information & Advisory Service
- * Regular Newsletter
- * Free Postage on 3 or more Titles
- * Rapid Delivery
- * No Obligation to Purchase

ALL FOR ONLY £3.00 PER YEAR!

Send large SAE for Catalogue & full details

THE BRAIN TRAIN CLUB
NORTHINGTON HOUSE

59 GRAY'S INN ROAD LONDON WC1X 8TL

LOTHLORIAN



Waterloo

- 1 or 2 player all graphic wargame
- Joystick or keyboard options
- Simultaneous movement by both sides
- Artillery bombardment with target selection
- 10 levels of play
- Comprehensive booklet
- Cassette £9.95 BBC or Electron

ALSO AVAILABLE FOR BBC AND ELECTRON:

Special Operations £6.95 Redcoats £6.95 Paras £6.95

THE WARMASTER CLUB - Join Today

- Free Membership
- Special Offers
- FREE Lothlorien Game if you join on this coupon AND buy Special Operations.
- Free Newsletter
- Special Club Editions
- Advance Information on new Lothlorien Wargames

M C Lothlorien Ltd, 56A Park Lane, Poynton, Tel: 0625 876642

Please send me _____ Please enclose me in the Warmaster Club ☐

Computer _____

I enclose a cheque/P.O. made payable to M C Lothlorien Ltd.

Please debit my Access Account No-VISA _____

Signature _____ Name _____

Address _____ Post Code _____

M C LOTHLORIAN, 56A Park Lane, Poynton, Cheshire SK12 1RE, Tel: Poynton (0625) 876642

REF EU2

Advertisers index

21st Software	52
Advanced Comp. Products	65
Andyke	35
Bit Twiddlers	70
Brain Train Club	70
Blue Ribbon Software	2
Cumana	20
Electrasoft	63
Epic Software	48
Golem Software	35
Kansas City Systems	71
Kosmos Software	65, 70
Lothlorien	70
Mayday Software	63
Microbyte Software	50
Millsgate	43
Mirrorsoft	12
Pace	39
Potter Programs	63
Qualsoft	50
Shards Software	48, 63
Slogger Software	31
Solidisk	10, 11
Superior Software	16, 66, 72
Vine Micros	46
Voltmace	32
Wigmore Assoc.	63
Wizard Developments	27

FACT FILE



for BBC and Electron

Expand your KOSMOS ANSWER BACK QUIZ with:

NATURAL HISTORY	(Ages 10+)	£3.95
ARITHMETIC	(Ages 6-11)	£3.95
SPELLING	(Ages 12+)	£3.95
KNOW SCOTLAND	(Ages 13+)	£3.95
FIRST AID	(Ages 14+)	£3.95
GENERAL SCIENCE	(Ages 6-11)	£3.95
JUNIOR GENERAL KNOWLEDGE*	(Ages 12+)	£3.95
SENIOR GENERAL KNOWLEDGE*	(Ages 14+)	£3.95
SPORT*		

* Some content as ANSWER BACK program of same title.

All FACTFILE 500 packs are compatible with...
ANSWER BACK JUNIOR QUIZ, SENIOR QUIZ and SPORTS QUIZ.
YOU MUST HAVE AN ANSWER BACK PROGRAM TO USE THE FACTFILES.

Each FACTFILE 500 pack contains an amazing database of 500 fascinating questions and 2000 multiple choice answers. The above list is only the start, dozens more leisure and educational titles will be added to the range shortly.

All FACTFILES are also available on 40 or 80 track BBC disc, £5.45 each.

ALL PACKS INCLUDE £50 PRIZE DRAW COUPON

ALL PRICES include VAT, P & P and 24-hour despatch

Send cheque, PO or quote your Access number



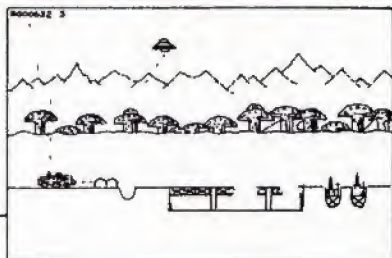
1 Pilgrims Close, Horlington, DUNSTABLE, Beds LU5 6LX
Tel: (05255) 3942

The new £8.50/£10.35 ELECTRON programs at just £4.95 each!

Prices include VAT and Postage.

MOON BUGGY

You've seen nothing like it! You can manipulate the Buggy three different ways as the ground speeds by with two firing directions to jump or splat the many obstacles. On the ground there are craters, boulders, debris, exploders, tanks, bridge traps, whilst in the air are spacecraft and rockets – all bent on your destruction! It's a very difficult one, with single hazards, multiple hazards and even combination hazards. Multiple scenes too. Fast fluid action, full graphics, full colour and sound. Multiple levels with both keyboard or joystick control. Outsold every arcade game at the recent Micro User exhibition!



Revenge of Zor

IT'S THE LONG AWAITED SEQUEL TO DRACULA AND RING OF TIME!

This is one for the dedicated Adventurer, or for those who want a real challenge. It is not an easy Adventure and will need a great amount of time and effort to solve, being very much harder and more complex than either Dracula Island or Ring of Time.

Having been sucked into the Vortex in your quest to find the Ring of Time, you now have to find and destroy the evil Zor, so as to return to your own place and time.

Your way will be hazardous and dangerous, yet not without humour, with many things destined to thwart your progress.

It is to the Kansas standard, incorporating a split screen, game save routine and we offer our telephone Help! service if you are stuck!

The only program ever to receive FIVE five star reviews
— including the influential Beebug user magazine!

PINBALL ARCADE

This is the program where you can create your own Pinball machines – save to tape to play them whenever you want!

There are six pages of shapes, including targets, bumpers and slings; straights and diagonals for different board shapes; numbers and letters for scores. Every one capable of easily being moved to any required position on the board, adjusted or taken off.

The Bounce can be adjusted for each individual thing. The tilt of the board can be altered for a faster run.

There is total control of the firing spring – just like the real thing – depending on how long taken to press the control bar. It has very real flippers, with the strength of these too being adjustable.

And of course there is scoring – highest score, last score and current score.

NORMALLY £10.95 BUT ON OFFER AT A RIDICULOUS £4.95 INCLUSIVE

Any two for £8.95 or all three for £12.50

Though formally BBC programs, all Kansas Electron programs have been faithfully converted to run correctly on the Electron – at the proper speed – whilst retaining all the BBC features.

We operate a first class return post service, with your order despatched the same day as received, by our private Post Office collection at 4.30pm.

If you order by telephone using either Access, Barclaycard or Diners credit card – you can have the program(s) tomorrow!

EVERY PROGRAM CARRIES OUR UNIQUE LIFETIME GUARANTEE – IF IT FAILS IT WILL BE REPLACED FREE OF CHARGE, THIS YEAR, NEXT YEAR OR IN TEN YEARS . . .

The longest established software publishers in the country, now in our eighth year, backed by 29 years media publishing from this same address! The reliable one . . .

Kansas

Kansas City Systems, Unit 3, Sutton Springs Wood, Chesterfield S44 5XF. Tel: 0246 850357

MORE THAN JUST A SEQUEL... A NEW EXPERIENCE

REPTON 2



COLLECT THE PUZZLE PIECES

THE PUZZLE PIECES IN POSITION

CLOSE-UP OF A MONSTER
REPTON 2

BOSS THE METEOR SHOWERS

OUT FOR THE BLIND SPIRITS

ACORN ELECTRON VERSION

REPTON met with unanimous acclaim from games players and reviewers alike. Now, totally redesigned and rewritten, we bring you a new experience... REPTON 2 — a challenge even for hardened REPTON addicts! Not only must you collect all the diamonds (more than a thousand in total), you must also find the 42 jigsaw puzzle pieces which have been strewn throughout the 16 levels. The levels of play, each 16 times the size of the TV screen, are connected by a series of transporters which propel you backwards and forwards between the different scenarios — but each transporter can only be used once. Each level has its own characteristics: brave the meteor storms at the planetary surface; entice the haunting spirits into their cages by strategically positioning the boulders; avoid the eerie skulls of past explorers; unlock the safes with hidden keys; and crush the fearsome monsters which hatch from giant eggs. Can you complete REPTON 2?

MORE PRIZES!

Complete REPTON 2 and enter our competition. The first 100 winning entrants will each receive a beautifully designed "I'VE COMPLETED REPTON 2" cotton T-shirt; all correct entries received before 31st March 1986 will be eligible for the cash prize of **£200**

CASSETTE VERSION — £9.95

BBC DISC VERSION — £11.95

WE PAY UP TO 20% ROYALTIES FOR HIGH QUALITY BBC & ELECTRON PROGRAMS



SUPERIOR SOFTWARE LTD.

Dept. EU12, Regent House,
Skinner Lane, Leeds 7.
Tel: 0532 459453.



OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.

